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18958 c.9 Catalogue of the specimens of Amphibia in... the British Museum. Pt. ii

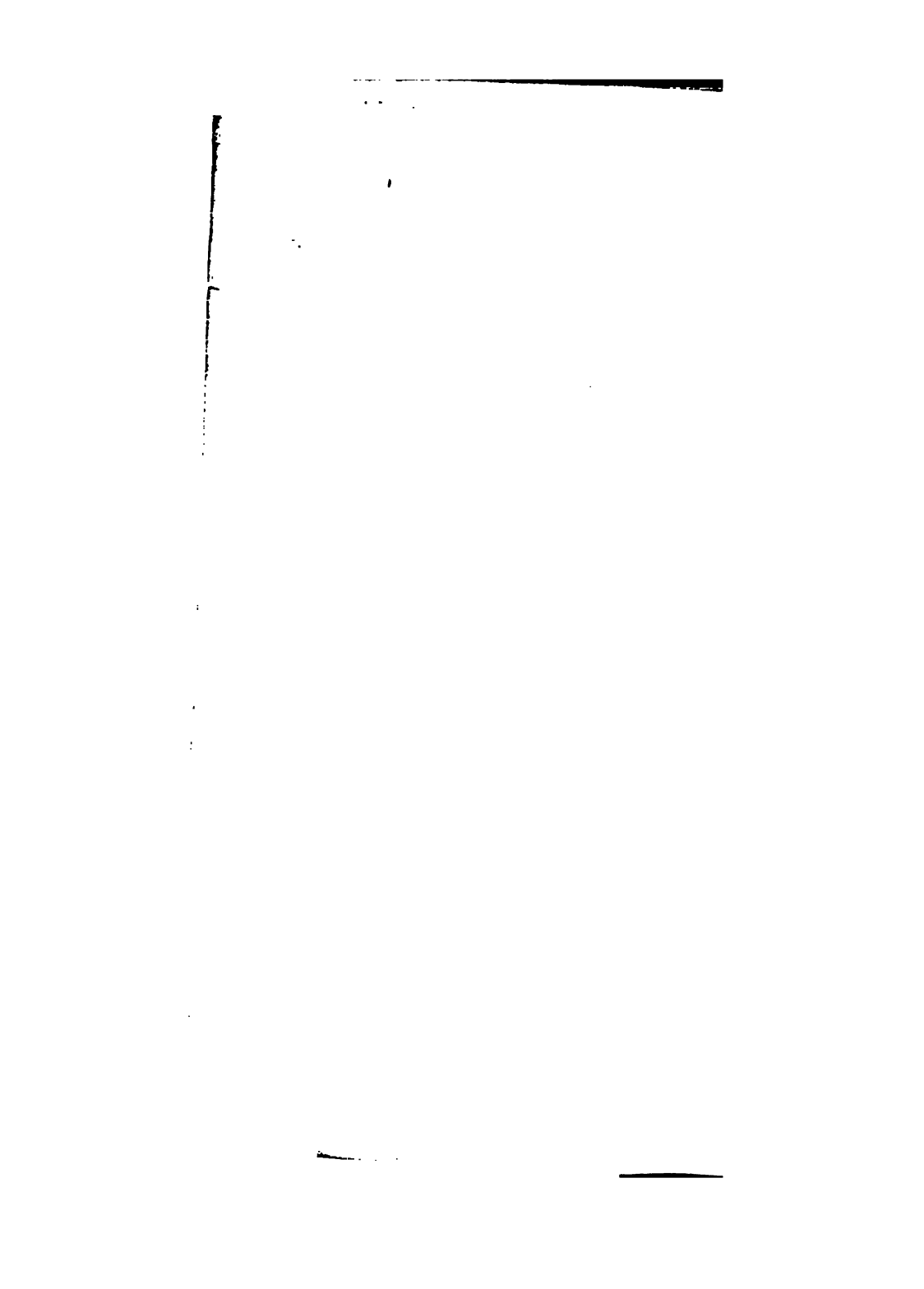
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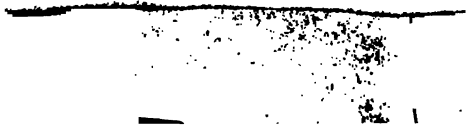


CATALOGUE
OF THE
SPECIMENS OF AMPHIBIA
IN
THE COLLECTION
OF THE
BRITISH MUSEUM.

PART II.
BATRACHIA GRADIENTIA, ETC.

[Gray f. E.]

PRINTED BY ORDER OF THE TRUSTEES.
LONDON: 1850.



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New-street-Square.

P R E F A C E.

THE first part of this Catalogue, containing the Toads and Frogs, or Tailless Batrachians, will shortly follow ; but so many additional specimens of these animals have been received in the Museum since the MS. was put into type, that it is considered advisable to defer its appearance until they can be examined, and the new ones described.

The part now printed contains the Tailed Amphibia, or Salamanders, Newts, and Sirens.

MM. Duméril and Bibron have not yet described the specimens of these families, and the death of M. Bibron, it is to be feared, has indefinitely deferred the appearance of the remainder of their work.

J. E. GRAY.

British Museum,
June 1. 1850.

9.

SYSTEMATIC INDEX.

The names in italic are desiderata in the Museum Collection.

	Page		Page
ORDER I. BATRACHIA.		<i>Xiphonura Jeffersoniana</i>	34
SUBORDER I. SALIENTIA.		<i>Ambystoma Carolinæ</i>	35
(See Part I.)		<i>tigrinum</i>	35
		<i>talpoideum</i>	36
SUBORDER II. GRADIENTIA.		<i>opacum</i>	36
Fam. I. SALAMANDRIDÆ.		<i>punctulatum</i>	37
<i>Salamandra nigra</i>	16	<i>macrodactylum</i>	37
<i>maculosa</i>	16	<i>macrotium</i>	37
<i>Pleurodeles Waltl</i>	17	<i>episcopus</i>	37
<i>Triton Poirerii</i>	18	<i>erythronotum</i>	37
<i>cristatus</i>	19	? <i>Haldemani</i>	38
<i>marmoratus</i>	20	? <i>frontale</i>	38
<i>alpestris</i>	21	<i>Plethodon glutinosum</i>	39
<i>Notophthalmus miniatus</i>	22	<i>granulatum</i>	39
<i>viridescens</i>	23	<i>Desmognathus niger</i>	40
<i>Euproctus platycephalus</i>	24	<i>fuscus</i>	40
<i>Cynops pyrrhogaster</i>	25	<i>auriculatus</i>	41
<i>Taricha torosa</i>	25	<i>Hemidactylum scutatum</i>	41
<i>lugubris</i>	26	<i>Batrachoseps attenuatus</i>	42
<i>Bradybates ventricosus</i>	26	<i>quadridigitatus</i>	42
<i>Lophinus punctatus</i>	27	<i>Spelerpes longicauda</i>	43
<i>palmatius</i>	28	<i>cirrigeria</i>	44
<i>Ommatotriton vittatus</i>	29	<i>bilineata</i>	44
<i>Seiranota perspicillata</i>	29	<i>guttolineata</i>	45
		<i>rubra</i>	45
Fam. II. MOLGIDÆ.		<i>montana</i>	46
<i>Hynobius nebulosus</i> (Japan)	30	<i>salmonea</i>	46
<i>Molge striata</i> (Japan)	31	<i>porphyritica</i>	46
		<i>Bellii</i>	46
Fam. III. PLETHODONTIDÆ.		<i>Geotriton fuscus</i>	47
<i>Onychodactylus japonicus</i>	33	<i>Edipus variegatus</i>	48
<i>Heterotriton ingens</i>	33	<i>Ensatina Eschscholtzii</i>	48
		<i>Axolotl</i>	49
		<i>Axolotes maculata</i>	50

	Page		Page
ORDER II. PSEUDOSAURIA.		<i>Ichthyophis glutinosus</i> . . .	60
Fam. I. PROTONOPSIDÆ.		<i>Rhinatrema bivittatum</i> . . .	61
<i>Sieboldia maxima</i> . . .	52	ORDER IV.	
<i>Protonopsis horrida</i> . . .	53	PSEUDOICHTHYAS.	
<i>fusca</i> . . .	54	Fam. I. LEPIDOSIRENIDÆ.	
Fam. II. AMPHIUMIDÆ.		<i>Lepidosiren paradoxa</i> . . .	62
<i>Amphiuma means</i> . . .	55	<i>Protopterus annectens</i> . . .	62
<i>Murænopsis tridactyla</i> . . .	55	<i>rhinocryptis</i> . . .	62
ORDER III. PSEUDOPHIDIA.		ORDER V. MEANTIA.	
Fam. I. CÆCILIDÆ.		Fam. I. PROTEIDÆ.	
<i>Cœcilia gracilis</i> . . .	57	<i>Proteus anguinus</i> . . .	62
<i>tentaculata</i> . . .	58	<i>Necturus maculosus</i> . . .	62
<i>compressicauda</i> . . .	58	<i>lateralis</i> . . .	62
<i>rostrata</i> . . .	58	Fam. II. SIRENIDÆ.	
<i>ozyura</i> . . .	58	<i>Siren lacertina</i> . . .	62
<i>squalostoma</i> . . .	59	<i>intermedia</i> . . .	62
<i>Siphonops interrupta</i> . . .	59	<i>Pseudobranchius striatus</i> . . .	62
<i>mexicana</i> . . .	59		

GEOGRAPHICAL INDEX.

44

	Page		P.
<i>Muraenopsis tridactyla</i> . . .	55	<i>Batrachoseps attenuatus</i> . . .	
<i>Necturus maculosus</i> . . .	66	<i>Bellii</i> . . .	
<i>lateralis</i> . . .	67	<i>Edipus variegatus</i> . . .	
<i>Siren lacertina</i> (Carolina) . . .	68	<i>Ensatina Eschscholtzii</i> . . .	
<i>intermedia</i> (Texas) . . .	69		
<i>Pseudobranchius striatus</i> . . .	69		
		TROPICAL AMERICA.	
N. AMERICA, West Coast.		<i>Cocillia gracilis</i> . . .	
<i>Taricha torosa</i> (California) . . .	25	<i>tentaculata</i> . . .	
<i>lugubris</i> . . .	25	<i>compressicauda</i> . . .	
? <i>Heterotriton ingens</i> . . .	33	<i>rostrata</i> . . .	
<i>Ambystoma punctulatum</i> . . .	37	<i>Siphonops interrupta</i> . . .	
<i>macrodictylum</i> . . .	37	<i>mexicana</i> . . .	
<i>maurortium</i> . . .	37	<i>Rhinotremata bivittatum</i> . . .	
		<i>Lepidosiren paradoxa</i> . . .	

CATALOGUE OF AMPHIBIA.

CLASS IV. AMPHIBIA.

- ~~Animal~~ furnished with a distinct bony skeleton.
~~Skin~~ naked, and without any bony case; very rarely with very small embedded scales.
~~Body~~ variable in form.
~~Skull~~ with two occipital condyles.
~~Head~~ without any distinct neck.
~~Toes~~ (almost always) without claws.
~~Ribs~~ none, or short. Sternum often distinct.
~~Male~~ without any prominent generative organs.
Respiring by cellular lungs, and often by external gills, which
~~generally~~ fall off as the animal reaches adult age.
Eggs with a soft shell.
Young subject to a metamorphosis.
~~Amphibia~~, Reptiles, seu A. Reptilia (partim), *Linn. Syst. Nat.* ed. 12. i. 3.
~~Sebæ~~ (seu Amphibia) Reptilia (part.) *Scovoli, Introd. H. N.* 460. 1777.
~~Batrachia~~ *Tschudi, Batrach.* 1838.
~~Batraciens~~ *Brongniart, Bull. Soc. Philom.* 1799; *Duméril, Zool. Anal.* 1806.
~~Batrachia~~ (and Ophidia part.) *Rafin. Annal. Nat.* 74. 1815.
~~Les Batraciens~~ (et Serpents nus) *Cuvier, Règ. Anim.* ii. 88. ed. 2. ii. 101.
~~Reptilia Batrachia~~ *Oppel, Rept.* 1811.
~~Amphibiens~~ *Blainv. Org. Anim.* i. tab. 5. 1822.
~~Batrachia~~, Reptiles Ictyoides ou Nudipellifères *Blainv. Bul. Soc. Philom.* 1816, 119.
~~Amphibia Batrachii~~ *Cuv.; Eichwald, Zool. Spec.* iii. 163.
~~Dipnoa~~ *Leuck.; Fitz. Nat. N. Class.* 63. 1826, *Syst. Rept.* 1843.
~~Dipnoa~~, or Diplonoa, *Batrachia Bonap. Amph. Eur.* 10. 1839;
Mem. Acad. Sci. Torino, ii. 1839.

Synopsis of Orders.

A. Nostrils enclosed in a bony case ; the internal nostrils opening into the middle of the palate.—**TRITONES.**

Order I. BATRACHIA.

Gill well developed, vanishing in adult age. Adult with four limbs.

Order II. PSEUDOSAURIA.

Gill rudimentary or internal. Body with four legs.

Order III. PSEUDOPHIDIA.

Gill rudimentary or internal. Body cylindrical. Legs none.

B. Nostrils not enclosed in a bony case ; the internal nostrils opening between the lips and the bones of the palate.—**SIRENES.**

Order IV. PSEUDOICHTHYAS.

Gill internal. External skin scaly.

Order V. MEANTIA.

Gill well developed, retained throughout life. Skin naked.

Or they may be divided according to the structure of the skull and arranged thus :

Subclass I. LACERTINI.—Skull formed of separate bones. Gills of the young (and, rarely, of the adult animal) well developed and exposed. Skin naked.

Order V. MEANTIA.

Gill permanent. Internal nostrils in inner edge of lip.

Order I. BATRACHIA.

Gill deciduous. Nostrils in a bony case, internal nostrils in palate.

Subclass II. ICHTHYODI.—Skull solid, the bones united together. Gills enclosed under skin, often early deciduous. Nostrils with brachial holes. Skin with embedded scales. Body elongate, tailed.

Order II. PSEUDOSAURIA.

Internal nostril in palate. Body depressed. Legs four. Scales minute, embedded.

Order III. PSEUDOPHIDIA.

Internal nostrils in palate. Body subcylindrical. Legs none. Scales minute, embedded.

Order IV. PSEUDOICHTHYAS.

Internal nostrils in the inner edge of upper lip. Body compressed. Legs four, rudimentary. Scales large.

A. TRITONES. — *The nostrils enclosed in a bony case; the internal nostrils opening on the sides of the middle of the palate.*

ORDER I. BATRACHIA.

Skull formed of separate bones.

Nostrils enclosed in a bony case; the internal nostrils opening on the sides of the middle of the palate.

Gills of the young (and rarely of the adult animals) well developed and exposed.

Skin naked, smooth.

Body of young elongate.

Tail often deciduous.

Legs four, rarely only two.

Batrachiens *Brongniart, Bull. Soc. Philom.* 1799; *Duméril, Zool. Anal.* 1806.

Batrachia *Rafin. Anal. Nat.* 74. 1815.

Batrachia and Hemibatrachia *Fitz. Syst. Rept.* 30. 33.

Amphibia Caducibranches *Latr. Fam. Nat.* 1823.

Divide into two Suborders thus : —

Suborder I. SALIENTIA.

Body short, depressed, without any tail.

Suborder II. GRADIENTIA.

Body elongate, tapering, tailed.

The details of the first Suborder are given in Part I.

EXPLANATION OF PLATES.

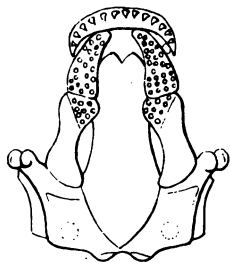
TABLE III.

- Fig. 10. Palatine surface of the skull of the larva of *Triton marmoratus*, p. 20., from Dugès, *Batrach.* p. 157. t. 14. f. 89., and Van der Hoeven, t. 1. f. 1.
11. Palatine surface of the skull of the adult *Triton marmoratus*, p. 20., from Dugès, l. c. p. 157. t. 14. f. 86.
12. Palatine surface of the skull of the *Axolotl*, from Cuvier, *Os. Fos.* v. t. 27. f. 25. p. 415.
13. Reduced figure of palatine surface of skull of *Cynops pyrrhogaster*, p. 25., from Tschudi, *Batr.* l. 2. f. 5. b., and *Sal. subcrinitata*, *Fauna Japon. Batr.* t. 5. f. 8.
14. Reduced figure of palatine surface of skull of *Molge striatipes*, p. 31., copied from *Sal. naevia*, *Fauna Japon. Batr.* t. 5. f. 14.
15. Reduced figure of palatine surface of skull of *Anychodactylus japonicus*, p. 33., copied from *Sal. unguiculata*, *Fauna Japon. Batr.* t. 5. f. 6.

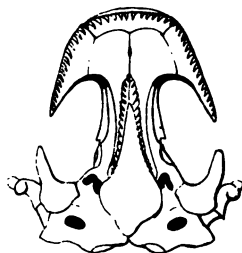
TABLE IV.

- Fig. 16. Palatine surface of skull of *Proteus anguinus*, p. 65., copied from Cuvier, *Os. Fos.* v. t. 27. f. 15.
17. Palatine surface of skull of *Siren lacertina*, p. 68., copied from Cuvier, *Os. Fos.* v. t. 27. f. 3.
18. Palatine surface of skull of *Protonopsis horrida*, p. 53., from Van der Hoeven, *Tijdschrift*, 1838, t. 1. f. 4.
19. Palatine surface of skull of *Cæcilia*, from Dugès, *Batr.* t. 1. f. 93. p. 161.
20. Palatine surface of skull of *Lepidosiren paradoxa*, p. 62., copied and reduced from *Ann. Sci. Nat. Zool.* xiv. t. 7. f. 6.
21. Palatine surface of head of *Muranopsis tridactyla*, p. 55., copied from Owen, *Odont.* t. 62. f. 7. (part only).

10

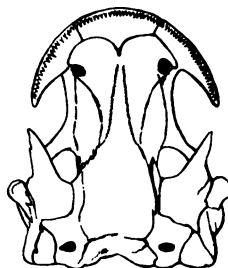


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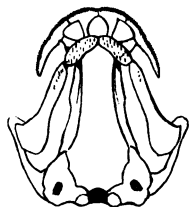


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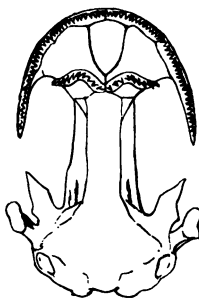
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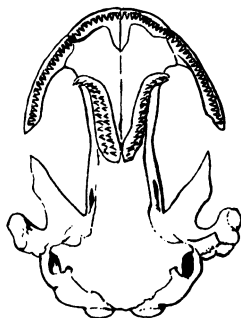
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14



Wing, Ark.

Ford & George, Imp.

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16

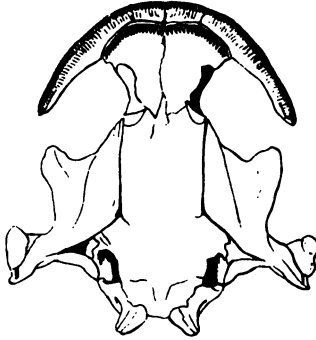


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IV

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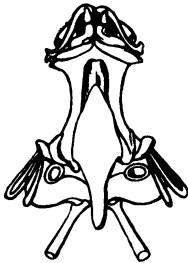
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Suborder II. *GRADIENTIA*.

Body elongate, tailed in all ages. Limbs four, weak, small, equal.

Gills well developed in the young, decaying as the animal arrives at full age, very rarely retained through life.

Teeth in both jaws, and often in the palate.

Ears hidden.

Internal nostrils in middle of palate, surrounded by bone.

Vent longitudinal.

Skin naked, smooth, or warty.

Sternum and *clavicule* none.

Ribs distinct or rudimentary.

Eggs elliptical, isolated, deposited separately at different periods, hatched in succession.

Larva elongate, conical, compressed behind. Gills exposed, on the side of the neck, over the three or four branchial slits. Fore and hind legs developed nearly at the same time. The gills are sometimes retained for a longer period, and are rarely even found withered on the side of the neck of the adult specimens.

Gradientia *Laur. Rept.* 1768.

Quadrupedes ovipari caudati (partim) *Lacép. Quadr.* 1. 1788.

Batrac. Urodèles *Duméril, Zool. Anal.* 1806.

Batrac. caudata *Oppel. Rept.* 1811.

Batrac. gradientia mutabilia *Merrem, Tent.* 1820.

Amph. caducibranchia Urodela *Dum. Fam. Nat.* 1825.

Ranæ Phaneroglossæ (part.) *Wagler, Syst.* 1830.

Amph. Urodela *Gray, Ann. Phil.* 1825, 218.; *Bell, Todd's Cyclop.*

Med. 1835; *Swains. Cab. Cyc.* ii. 342.

B. urophora (part.) *Hogg, Ann. N. H.* 1839.

B. tetrapoda et dipoda *Hogg, Ann. N. H.* 1839.

A. Monopneumena caducibranchia *Hogg, l. c.* 1841.

A. M. caducibr. arcucadentia (part.) *Hogg, l. c.* 19.

Salamandrina *Müller, Isis*, 1831, 710.

A. prolatibranchia (part.) *Hogg, Ann. Mag. N. H.* 1841, 361.

Salamandrinæ *Tschudi, Batr.* 1838, 26. 91.

Urodelia *Rafin. Annal. Nat.* 78. 1815.

Urodeli *Eichwald, Zool. Spec.* iii. 164.

Ranæ (*Salamandridæ*) *Bonap. Faun. Ital.* ii. 4. 131., *Amph. Eur.* ii. 1839.

Salamandra *Brongn. Cuvier, R. A.* ii. 15.

Pseudosauriens ou *Salamandres* *Blainv. Bull. Soc. Phil.* 1816, 111.

B. U. atretodera *Baird, Amer. Batrach.* 281. 1849.

Hemibatrachia Fitz. *S. R.* 33.

Atretodères ou *Salamandroides* Dum. & Bibr. *Exp. Gen.* viii. 92.

Salamandridæ (partim) Hogg, *Ann. N. H.* 1839; *Bonap. Amph. Eur.* ii. 71.

Tritonia Rafin. *Annal. Nat.* 78. 1815.

Salamandridæ Gray, *Ann. Phil.* 1825, 215.

Rafinesque names, but does not describe, three genera in the suborder, viz. *PALMETES*, *LOPHINUS*, *MEINUS*.

Synopsis of Families.

- I. *SALAMANDRIDÆ*. Palate with teeth on the inner hinder edge of the elongate palatine bones, in two diverging series. Sphenoid toothless. t. 3. f. 11. 13.
- II. *MOLGIDÆ*. Palate with teeth on the outer hinder edge of the elongated palatine bones, in two converging series. Sphenoid toothless. t. 3. f. 14.
- III. *PLETHODONTIDÆ*. Palatine teeth in a short series across the hinder end of each short vomerine bone, forming a cross band behind each internal nostril, and the sphenoid often covered with teeth. t. 3. f. 15.

FAM. I. SALAMANDRIDÆ.

Palatine teeth in two longitudinal series; one on the inner hinder edge of each of the elongated triangular vomerine bones. Sphenoid toothless. t. 3. f. 11. 13.

Skull with a bony orbit above the eyes; sometimes wanting.

Tongue broad, attached only slightly, free on the sides, and more or less behind.

Ribs rarely developed and mobile; generally rudimentary, immovable, or entirely wanting.

Salamandridæ Gray, *Ann. Phil.* 1825, 215.

Cryptopleura (part.) Fitz. *S. R.* 33.

Elophile (part.) Fitz. *S. R.* 33.

Hydrophili Fitz. *S. R.* 33.

Salamandrinæ (part.) Fitz. *S. R.* 33.

Tritones Tschudi, *Batrac.*; Fitz. *S. R.* 34.

Salamandræ (part.) Tschudi, *Batr.* t. ; Fitz. *S. R.* 33.

Salamandrina (part.) Bonap. *Fauna Ital.* ii. 131., *Amph. Eur.* 11.

hæneropleura et Cryptopleura (part.) *Fitz. S. R.* 32.
 leurodeles *Tschudi, Batr.* 56. 91.; *Fitz. S. R.* 33.
 leurodelina *Bonap. Faun. Ital.* ii. 171., *Amph. Eur.*

Synopsis of Genera.

- A. *Tongue moderate, attached; hinder and side edges scarcely free. Toes 4:5.*
- a. *Palatine Teeth in two series, extending before the internal nostrils.*
1. SALAMANDRA. Back with a series of perforated warts. Parotids large, glandular.
 2. PLEURODELES. Sides with a series of holes perforated by the ribs, and a line of pores between the axilla and the groin.
- b. *Palatine teeth in two series, commencing on a line with the internal nostrils.*
3. TRITON. Granular. Sides with a series of pores between the axilla and the groin. Tongue oblong. Tail compressed. Parotids porous, distinct.
 4. NOTOPHTHALMUS. Granular. Sides with a series of pores between axilla and groin. Tongue oblong. Tail compressed. Parotids none.
 5. EUPROCTUS. Granular. Tongue rhombic. Vent with a conical protuberance. Tail compressed, round at the base.
 6. CYNOPS. Granular. Sides not porous. Parotids large, compressed. Tail compressed.
 7. TARICHA. Granular. Sides not porous. Parotids indistinct. Tail compressed.
 8. BRADYBATES. Granular. Tongue very small. Tail round at the base.
 9. LOPHINUS. Smooth. Sides poreless. Palatine teeth in two separate series. Orbit in palate small.
 10. OMMATOTRITON. Smooth. Sides poreless. Palatine teeth in a crowded series. Orbit in palate very large, convex.
- B. *Tongue large, hinder half free. Toes 4:4. Palatine teeth in two series.*
11. SEIRANOTA. Granular.

A. *Tongue moderate, attached; hinder and side edges scarcely free.*
Toes 4:5.—*Salamandrina.*

a. *The back with a series of pierced warts on each side.*

1. SALAMANDRA.

Head thick. Eyes large. Mouth large. Tongue broad, fixed in front, granular; hinder part and sides scarcely free. Palatine teeth in two separate longitudinal series, parallel behind, but rather wider apart and arched in front. Parotids large, glandular, flat-topped.—Body with two series of glands down the back and tail, each ending in a pore; lateral line simple, with a group of pores on each side.—Feet very minute.—Toes 4:3 free.—Tail roundish.—Skin smooth.—Ribs slightly developed, not movable.—Females viviparous.

Rusconi and Cuvier have observed that in the young animal the whole vomerine is covered with teeth. *Cuvier, Os. Fos. v. 418.*

Salamandra Laur. Rept. 41.; Dum. Zool. Anal. 95.; Oppel. Rept. 74. 80.; Cuvier, R. A. ii. 99. ed. 2. ii. 115.; Merrem, Tent. 184. Rafin. Annal. Nat. 78. 1815; Bonap. Fauna Ital. ii. 181., Amph. Eur. 66.; Tschudi, Batrach. 56. 91.; Fitz. S. R. 23.; Gray, Ann. Phil. 1825, 215.

1. SALAMANDRA NIGRA. Black Salamander.

Black, spotless. Skin rugose, with papillæ; lateral warts very prominent. Toes depressed.

Salamandra atra Laur. Rept. 42. 149. t. 1. f. 2.; Latr. Rept. ii. 218.; Daud. Rept. viii. 215.; Merrem, Tent. 184.; Bonap. Fauna Ital. t. . f. 1.

Lacerta Salamandra β. Gmelin, S. N. i. 1067.

Lacerta atra Wolf, Sturm, Deutsch. Fauna, t.

a. In spirits. Styria. From Leyden Museum.

2. SALAMANDRA MACULOSA. Salamander.

Black, yellow-spotted; warts on the sides numerous, prominent.

Lacerta Salamandra Linn. Mus. Ad. Fred. 1. 45., Syst. N. 1371.; Gmelin, S. N. 1. 1067.; Latr. Rept. ii. 194.

Salamandra maculosa Laur. Rept. 42. 151.; Gravenh. ; Wagler, ; Fitz. ; Bonap. Faun. Ital. t. , Amph. Eur. 67.; Fitz. S. R. 33.

- S. maculata* Merrem, *Tent.* 185.; *Tschudi, Batr.* 91.
S. vulgaris Cloquet, *Dict. Sci. Nat.* xlvii. 50.
Salamandra terrestris Wurf.; *Ray, Syn.* 273.; *Daud. Rept.* viii. 221.
 t. 97. f. 1.; *Schlegel*, ; *Funke*,
Salamandra *Gesner, Quad. ov.* 80 fig.
Salamandra Corsica Savi, *N. Giorn. Pisa*, 1839, 208.; *Bonap. Fauna Ital.* t. . f. ., *Amph. Eur.* 67. (with anomalous teeth.)
OSTEOL. Cuvier, Os. Fos. v. 406. t. 25. f. 1, 9. 10.
ANAT. Dugès, Batrac. t.

- a.* In spirits. Sardinia. Presented by Professor Bonelli.
b—d. In spirits. Europe.
e. In spirits. Black; back with two yellow streaks; belly with large yellow spots on each side. Portugal. Presented by P. B. Webb, Esq.
f. In spirits. Yellow; back with three broad black streaks. S. Europe. Portugal. Presented by P. B. Webb, Esq.
g. In spirits. Hungary. Black, with roundish yellow spots. Mr. Brandt's collection.

b. The sides with a line of small pores between the axilla and groin.

2. PLEURODELES.

Head rounded, rather depressed. Tongue small, nearly circular, adherent, edges slightly free. Parotids porous. Eyelid equal. — *Limbs* long. — *Toes* 4:5, free, clawless, elongate. — *Tail* long, thin, compressed at the base. — *Teeth* very small, acute, on the inner edge of the jaws. Palatine teeth in two distant longitudinal series, united by an arch in front, near the maxillary teeth, much in front of the line of the internal nostrils. — *Ribs* perfect, fourteen pair, pointed, perforating the skin. — *Orbit* with a peculiar bony arch above.

Pleurodeles Michahelles, Isis, 1830, 195.; *Tschudi, Batr.* 56. 91.; *Bonap. Fauna Ital.* ii. 113., *Amph. Eur.* 65.; *Fitz. S. R.* 33.

1. PLEURODELES WALTJ.

Brown spotted, with a series of white specks on each side; beneath pale yellowish, black-speckled. Tail rather longer than rest of the body.

Pleurodeles Waltj Michah. Isis, 1830, 195. t. 2.; *Bonap. Fauna Ital.* t. . f. 5.; *Tschudi, Batr.* 91. t. 2. f. 1., *Mém. Sci. Nat.* t. 5. f. 1.; *Fitz. S. R.* 33.

- a. In spirits. Tangier. Skin tubercular, with a blackish horny wart in the centre of each tubercle. Back crested. Tail compressed, with a continued fringed edge. Grey-brown above, with a series of roundish spots on each side; beneath whitish. Length $3\frac{1}{2}$ in; tail $7\frac{1}{2}$ inches. The tail longer; gill in a very rudimentary condition. From Mr. Fraser's Collection.
- b. In spirits. Tangier. Tail shorter, the gill remains a contracted state on each side. From Mr. Fraser's Collection.
- c, d. In spirits. Young. S. Europe? Presented by I Webb, Esq.

3. TRITON.

Head rounded, convex; crown rather flat. Tongue large, papillary, sides free, pointed in front. Palatine teeth numerous in two separate longitudinal series, rather diverging behind front, and nearly on a line with the internal nostrils. Maxillary teeth rather large. Parotids porous, a group of pores the lores, and a line of pores on each side between the legs. Skin soft, granular. — Tail compressed, almost the length of body. — Toes elongate, slender, free or lobed, or imperfectly palmated. Plantar warts distinct. — Ribs very short, slender. The lips of the old specimens become enlarged, dependent.

Triton, sect. 1. Gray in Griffith's *A. K.* ix.

Triton Bell, *Brit. Rept.* 119.; *Fitz. S. R.* 32.; *Bonap. Amph.* 21., *Fauna Ital.* ii. 131. n. 16.

Triton sp. *Laur. Rept.* 37.; *Duméril, Z. A.* 95.; *Oppel. Rept.* 2 *Cuvier, R. A.* ii. 99.; *Gray, Ann. Phil.* 1828, 215.; *Tschudi, I.* 60. 95. (not Linn. nor Lamck.)

Triturus Rafin. Annal. Nat. 78. 1815.

Oliacurus Leuckart.

Glossoliga Bonap. Fauna Ital. ii. 131.

Molge sp. *Merrem, Tent.* 185. 1820.

LARVA:

Ichthyosaurus Latr. Rept. (not Kœnig.)

Proteus, part. *Laur. Rept.*

1. TRITON POIRETI.

Pale whitish (in spirits, perhaps bleached), with irregular pur brown spots. Tail longer than the body and head, rather square at the base, then compressed with a sharp upper and lower edge.

- Lamandra major* Gray in Griffith's *A. K.* ix.
fenestrata Mus. Paris.
nebulosus Guich. *Explor. Sci. Alger. Rept.* t. 4. f. 1. (no text).
Poireti Gervais, *Bull. Soc. Sc. Nat.* 1835, vi. 313., *Ann. Sci. Nat.* vii. 312.
certa palustris? *Poiret, Voy. Barb.* i. 290. (not Linn.)
lossoliga Poireti Bonap. *Fauna Ital.* ii. 131. t. . f. 3. (young); *Fitz. S. R.* 33.

a. In spirits. N. Africa?

b. In spirits. Young? N. Africa? Tail short, very acute, only as long as the body, with an even membranous fin on each edge. Back and tail brown-spotted.

2. TRITON CRISTATUS.

Blackish, black-spotted; sides minutely white-dotted. Tail with a lanceolate bluish longitudinal band, rather below the middle; lower edge yellow or orange. Belly yellow or red, with rows of black spots, the middle spot often confluent. Parotids porous. A series of pores on each side of the back, and along each side of the belly, continued over the under side of the limbs, forking in front, going over and under the eyes. The line over the eyes and in front of the orbit is formed of two or three series. Lips of adult dilated, enlarged.

Male in breeding season: dorsal and caudal crest toothed, and separated by a notch at the loins. Female and male in winter: crest none; lower edge of tail orange. (*Penn. B. Z.* iii. t. 4.; *Laur. Rept.* t. 2. f. 4.)

Young olive-brown, dorsal line yellow; abdomen orange, black-spotted; lower edge of tail orange-red.

- triton cristatus* *Laur. Rept.* 39. 146.; *Tschudi, Batrach.* 95.; *Fitz. S. R.* 34.; *Bell, Brit. Rept.* 119. fig. (adult); *Bonap. Fauna Ital.* t. . f. 1. 2.; *Bibron, P. Z. S.* 1838, 23.
certa palustris *Linn. S. N.* i. 370.; *Sturm, Faun. Germ.* t. .
americanus *Laur. Rept.* 49., from *Seba, Thes.* t. 89. f. 4, 5.
lac. americana *Houtt.*; *Gmelin, S. N.* i. 1065.
lac. aquatica *n. Gmelin, S. N.* i. 1065. (not Linn.)
lac. lacustris *Blumenb. Handb.* 248.
salamandra palustris *Schneid. Amph.* i. 60.
lac. porosa *Retzius, Faun. Suec.* i. 288. ♂
salamandra cristata *Schneider, Amph.* i. 57. ♂; *Daud. Rept.* viii. 233.; *Cuvier, R. A.* ii. 100. ed. 2. ii. 116.
platyura *Daubent.*
laticauda *Bonmat, Enc. Meth.* t. 2. f. 4.

Molge palustris Merrem, *Tent.* 187.; *Gravenh. Delic. Mus.* 85.

Salamandra platycauda Rusconi, t. 1. f. 3, 4., t. 2. f. 1, 2.

Lacertus aquaticus Gesner, *Quad. ov.* 31. fig.

Salamandra aquatica Ray.

Triton Bibronii Bell, *Brit. Rept.* 129. fig. (young.)

Triton marmoratus Bibron, *Proc. Z. Soc.* 1838, 23. (not Latr.)

Salamandra carnifex Schneider, *Amph.* i. 71.

Lac. palustris d. Gmelin, *S. N.* i. 1065.

Triton carnifex Laur. 38. t. 2. f. 3.; Bonap. *Fauna Ital.* t. 1.

S. pruniata Schneid. *Amph.* i. 69.

LARVA, Penn. *B. Z.* iii. t. 4.

OSTEOL. Cuvier, *Os. Fos.* vii. 8. t. 26. f. 6, 7, 8.; Dugès, *Bat.*

a. In spirits. Not crested. Exeter. Presented by W. Leach, M.D.

b. In spirits. Not crested. Wandsworth. Presented by W. E. Leach, M.D.

c, d. In spirits. Half-grown. Bayswater. Presented by Latham, Esq.
T. Bibronii Bell, *Brit. Rept.* 129.

e—g. Larvæ in different stages. Cobham, Surrey. Presented by W. E. Leach, M.D.

h—k. In spirits. Back highly crested. England.

l. In spirits. Nape, crown, and tail low-crested. Europe.

m. In spirits. Crested. Near London. Presented by J. Gray, Esq.

n. In spirits. Small. Not crested. Presented by W. Leach, M.D.

o—q. In spirits. Larvæ of different sizes. Cobham, Surrey. Presented by W. E. Leach, M.D.

r—u. In spirits. Adult, back with only a slight ridge. Presented by Professor Bonelli.

v. In spirits. Adult, back with only a slight ridge. Russia.

x—z. In spirits. Nearly full-grown, with short irregular spots on each side. Brown, black-spotted; sides white dotted; belly yellow, spotless. Hamburg. Mr. Brandt's Collection.

Var.? *Triton marmoratus* Bonap. *Fauna Ital.* t., *Amph. Eur.* (not Cuvier.)

3. TRITON MARMORATUS.

Olive-brown. Back grey-marbled and black-dotted. Lower part of sides and belly white-dotted. Head grey, black-dotted and spotted. Dorsal streak and under side of tail orange yellow.

- alamandra marmorata* Cuvier, *R. A.* ii. 115.
 riton Gesneri Latr. *Rept.* ii. 221.
 . marmoratus Latr. *Rept.*; Daud. *Rept.* viii. 241.; Tschudi, *Batr.* 5.
Salam. elegans Lesson, *Rev. Zool. Soc. Cuvier*, 1839, 199. (young?)
 OSTEOL. t. 3. f. 10. f. 11. Dugès, *Batrac.* t. 14. f. 85. 88., cop.
 an der Hoeven, *Tijdsch. N. Gesch.* 1838, t. 1. f. 12.
 a, b. Adult, and half-grown. Oporto. Presented by Col. Owen, K.C.A.
 c. In spirits. Brown, dorsal line white, adult discoloured. Europe.
 d, e. Side grey-marbled, dorsal line white, belly spotless; young. S. Europe. Presented by P. B. Webb, Esq.

4. TRITON? ALPESTRIS.

- ead-coloured, beneath orange, spotless; side with series of black spots. Nose rather blunt. Back warty. Belly smooth. Dorsal crest none. Tail shorter than the body, compressed, upper and lower edges acute.
alamandra aquatica a nullo hactenus descriptus Wurf. *Salam.* 64. t. 2. f. 4.
 iton alpestris Laur. *Rept.* 38. t. 2. f. 4.; Bonap. *Faun. Ital.* t. f. 2.; Sturm, *Fauna Germ.* t.; Tschudi, *Batr.* 95.
 Wurfbainii Laur. *Rept.* 38.
 salamandroides Laur. *Rept.* t.; Schrank, *Faun. Boic.*
 teus tritonius Laur. 37. t. 2. f. 2. (larva.)
 certa lacustris Gmelin, *S. N.* i. 1065.
alamandra alpestris Bechst. in Lacép. ii. 260.; Schneid. *Amph.* i. 71.
 ignea in Bechst. in Lacép. ii. 263.
 Wurfbainii Latr. *Rept.* ii. 245. t.
 certa gyrinoides Merrem, *Schrift. Berl. N. F.* ix. 194. t. 6.
 olge Wurfbainii Merrem, *Tent.* 186.
 olge alpestris Merrem, *Tent.* 187.
 certa Triton Merrem, *Tent.* 187.
 olge ignea Gravenh.; Merrem, *Rept.* 186.
alamandra rubriventris Daud. viii. 239. t. 98. f. 1.
alamandre ceinturée Latr. *Salam.* 52. t. 5. f. 5.
alamandra cincta Daud. *Rept.* viii. 259

- a.? In spirits. Not good state. Back warty, grey, black-marbled. Sides white-dotted, with several series of small black spots; beneath yellow, spotless. Collar under throat black-spotted. Europe.
 b. In spirits. Back blackish: side and sides of tail black-spotted; beneath, yellow spotless: lower lip with a

Var. 1. Skin very smooth, scarcely warty.

T. alpestris apuanus Bonap. *Fauna Ital.* t. . f. 3.

Hab. Italy. Mus. Bonaparte.

5. ? *TRITON NYCHTHEMERUS* Michah., Bonap. *Fau*
Tschudi, Batrac. 95. "is perhaps the y
morata? or *T. cristata*." Bonap. *Amph. E*

6. *TRITON ERMANNI* Wiegman., quoted by *Tschudi*
unknown to me.

4. NOTOPHTHALMUS.

Head flat, crown ridged. Skin granular, rugose oblong, attached, edges scarcely free. Palatine series, rather wider apart behind. Internal n long, transverse. Parotids none, poreless. — *S* of pores. — *Toes* 4 : 5, free, depressed; soles w pressed. Lower sides of thighs of males? with band.

A bony orbit above the eye, formed of the u from the frontal and tympanic bones, enclosing a which pass the flexor muscles of the jaw, similar *Cynops*, *Pleurodeles*, and *Euproctus*. The ossifi to the hyoid apparatus, carpus, and tarsus. compressed, with high crests. Three apertures cheeks behind the eye, not communicating w the mouth. Hind feet much flattened; first a nearly rudimentary. *Baird*, l. c. 281. 1849.

Dr. Holbrook describes this species as having a of palatine teeth, but they are not apparent in The genus chiefly differs from *Triton* in the want *Triturus* (and *Notophthalmia* and *Diemictylus*) J 24. March, 1820.

- Triturus miniatus Rafin. Ann. of Nat.* n. 24. 1820.
Sal. Stellio Say, Amer. Jour. Sci. i. 264. (not Catesby.)
Sal. symmetrica Harlan, Jour. Acad. N. S. Phil. v. 158. 1825,
N. A. Rept. 67., *Med. and Phys. Res.* 98.; *Holbrook, N. A. Herp.* v. 57. t. 17.; *Schlegel, Faun. Japon.* 119.
Salamandra Greenii Gray, Griffith, A. K. ix.
Molge ocellata Bell, MS.
Tristella symmetrica Gray, MS. B. M.
Notophthalmus miniatus Baird, l. c. 284

- a. In fluid. N. America. Presented by T. Bell, Esq.
S. Greenii Gray, Brit. Mus.
b. In spirits. N. America. Presented by T. Bell, Esq.
Molge ocellata Bell, MS.
c, d. In spirits. N. America. Presented by Jacob Green, M.D.
e, f. In spirits. N. America. Presented by E. Doubleday, Esq.
g, h. In spirits. N. America. From the Leyden Museum.
Var. Nearly smooth; spots on sides of back oblong, one or more rarely confluent.
i—k. In spirits. N. America, S. Carolina. Presented by Dr. R. Harlan.

2. NOTOPHTHALMUS VIRIDESCENS.

- “Head and body above olive-brown, with two rows of bright vermilion circular vertebral spots. Throat and abdomen orange, black-dotted. Tail longer than the head and body, compressed in its whole length. Tongue broad, flat, entire, adherent, except on its front and sides.”

- Salamandra dorsalis Harlan, Jour. Acad. N. S. Phil.* v. 201. 1828; *Storer, Rept. Mass.* 59.
S. millepunctata Storer, Boston Jour. n. 11. ii. 60.
Triton dorsalis Holbrook, N. A. Herp. v. 77. t. 25.
Triturus (Diemictylus) viridescens Rafin. Annal. of Nat. n. 22. 1820.
Triton millepunctata Dekay, Rept. N. York, 84. t. 15. f. 34.
Notophthalmus viridescens Baird, Batr. Amer. 284. 1849.
Hab. Maine, Pennsylvania, Georgia.

5. EUPROCTUS.

- Tongue* large, depressed, lateral and hinder margin scarcely free.
— *Maxillary teeth* rather large, strong, curved; *palatine series*

two, straight, diverging. — *Parotids* none. — *Skin* gran young smooth, soft; anal regions of the adult produced cone, upper foramen roundish at base of tail. — *Tail* long, subcompressed, round at the base. — *Limbs* strong. 4 : 5, long, slender, free; plantar warts none; middle to est. — *Ribs* well developed, mobile. — *Orbit* with a peculiar arch above.

Bibron represents the tongue as small and rhombic, the hinder end of the series of palatine teeth as arched and divided. — *Euproctus* *Gené*; *Bonap. Fauna Ital.* ii. 95. 131. n. 13., *Eur.* 21.; *Berthold, Lehrb. Zool.* 211. 1845; *?* *Megapterna* *Savi, N. Gior.* 1839; *Bonap. Fauna Ital.* ii. *Pelonectes* *Fitz. S. R.* 33. *Salamandrina* (part.) *Fitz. S. R.*

1. *EUPROCTUS PLATYCEPHALUS*.

Olive brown, white-granulated. Centre of under side cin black dotted and spotted. Tail rather longer than the head. Male thighs smooth; female thighs spurred behind. Larva ashy brown, very minutely black-dotted; beneath yellowish brown; back with two series of ferruginous spots. Short, two-edged.

Molge platycephala *Otto; Gravenh. Mus. Wrat.* 84. 3.

Triton Rusconi *Gené, Mus. Tigur.*

Euproctus Rusconi *Gené, Syn. Rept. Sard.* 78. t. 1. f. 34.; *Fauna Ital.* t. .; *Berthold, Lehrb. Zool.* 211. 1845; *Explor. Sci. Algérie, Rept.* t. 4. f. 2. no text.

? *Megapterna montana* *Savi, Nuov. Giorn. Pisa,* 1839, 211.; *Fauna Ital.* t. 62.

Euproctus platycephalus *Bonap. Amph. Eur.* 68., *Fauna Ital.* t. . f. 1.

Pelonectes platycephalus *Fitz. S. R.* 33.

Hab. Sardinia and Corsica. *Mus. Bonaparte, Rome.*

c. *The sides without any series of pores between the axilla and*

6. CYNOPS.

Head broad, crown flat, muzzle prominent. *Parotids* very swollen, compressed, rounded; and glands on the sides of the neck porous. — *Body* short. — *Skin* granulose. Sides with any series of pores. — *Tail* compressed, smooth. — *Palatine* small, in two separate longitudinal series, rather diverging below. (t. 3. f. 13.) — *Tongue* very small, suborbicular, adherent, slender.

fleshy, scarcely free on the edges. — *Feet* short, strong. — *Toes* 4 : 5. — *Ribs* — ? — *Skull* broad, with a distinct zygomatic arch.
Cynops Tschudi, Batrac. 94.; *Bonap. Fauna Ital.* ii. 131. n. 11.;
Fitz. S. R. 33.
Pelonectes sp. *Fitz. S. R.* 33.
Salamandrina (part.) *Fitz. S. R.* 33.

1. CYNOPS PYRRHOGASTER.

Brown, beneath bright red, black-spotted.

Molge pyrrhogastra Boie, Isis, 1826, 215.

Cynops subcristatus Tschudi, Batr. 94. t. 2. f. 5.

Salam. subcristata Schlegel, Fauna Jap. vii. t. 4. f. 1. 2, 3. t. 5. f. 7, 8., *Abbild.* t. 40. f. 1. 3.

OSTEOL. t. 3. f. 13. *Tschudi, Batr.* t. 2. f. 5.; cop. *Schlegel, Fauna Japon.* t. 5. f. 7, 8. (palatine teeth omitted.)

a—c. In spirits. Japan. From the Leyden Museum.

7. TARICHA.

Head broad, crown flat, granular. *Tongue* roundish, attached; hinder and side edges only slightly free. *Palatine* teeth in two parallel nearly close series. *Parotids* swollen, porous. — *Skin* granular. *Sides* with a black line, but without any line of pores. — *Tail* elongated, compressed. — *Toes* 4 : 5, free, depressed. — *Postorbital* apophysis distinct.

Notophthalmus (part.) *Rafin.*; *Baird, Amer. Batr.* 284. 1849.

1. TARICHA TOROSA.

Black, with scattered, elevated, roundish, granular tubercles. *Chin*, *throat*, *abdomen*, and *beneath*, yellow mingled with very minute pale dots. *Tail* rather longer than the head and body, rounded at the base, compressed at the end, with a slightly elevated keel on the two edges. *Length* six inches. *Toes* 4 : 5, inner very small.

Triton torosus Esch. Zool. Atlas, iii. 12. t. 21. f. 15. (skull.)

Notophthalmus torosus Baird, Amer. Batr. 284.

Salamandra Beecheyi Gray in Griffith's A. K. i. 107.; *Zool. Beechey's Voy.* t. 31. f. 3. 1839.

Triton Ermanni Wiegman; Ermann, Reise, 1835, *Arch.* 1836.

T. granulosus Skelton, Sillim. Jour. vii. 202. 1849.

Pleurodeles Californiæ Bibron in Mus. Zool. Soc.

a, b. In spirits. California, Monterey.

2. TARICHA? LUGUBRIS.

Head large. Eyes very prominent. Tail rather longer than the body, which is cylindrical. Head, tail, extremities, and the rest of the animal, dark olive above, lighter beneath. An indistinct, irregular row of yellowish spots on each side; several small spots. Palatine teeth ———?

Salamandra lugubris Halliwell, Journ. A. N. S. Philad. 1848, 126.

Hab. Monterey, Upper California.

This species wants further examination.

8. BRADYBATES.

Head small. Muzzle rounded. Forehead compressed. Palatine teeth few. Tongue very small, papillary, entirely adherent. External nostrils under the eyes. Parotids indistinct. — *Limbs* short. — *Feet* small. — *Toes* 4:5, free. — *Tail* short, roundish, turgid at the base. — *Ribs* distinct.

Bradybates Tschudi, Batr. 56. 91.; Bonap. Amph. Eur. 66., Fauna Ital. ii. 131.

1. BRADYBATES VENTRICOSUS.

Brown, with obsolete very small transverse lines. Tail much shorter than the body.

Bradybates ventricosus Tschudi, Batr. 91. t. 2. f. 2.; Bonap. Amph. Eur. 66., Fauna Ital. t. . f. 4.; Fitz. S. R. 33.

Hab. Spain. Mus. Neuchâtel, and Mus. Bonaparte, Rome.

9. LOPHINUS.

Parotids and lines on the head porous. — *Skin* smooth (or minutely granular when on land). — *Sides* with a blood-vessel, but no series of pores between the axilla and groin. — *Tongue* small, oblong. — *Palatine teeth* in two close longitudinal lines gradually diverging behind. — *Orbits* in palate slightly convex. — *Toes* 4:5, free, lobed, or webbed. — *Tail* compressed. — Back and tail of male with a continued crest.

Lophinus Rafn. Anal. Nat. 78. 1815.

Triton sp. *Tschudi, Batrac. 95.; Bonap. Amph. Eur. 70, 71.*

Lissotriton sp. *Bell, Brit. Rept. 332.; Fitz. S. R. 33.*

Triton, § 2. *Gray in Griffith's A. K. ix.*

1. LOPHINUS PUNCTATUS.

Greenish or brown, black-spotted and dotted, beneath red and yellow. Head black-streaked. Fin of the back of the male high, continued on back and upper and lower side of tail, scoloped on the edges; of the female, low on the back, higher on both edges of the tail, entire. Toes separate; of the males in summer fringed with membrane, of young simple. Palatine teeth in two very close series.

Triton parisinus Laur. Rept. 40.

Lacerta aquatica Linn. S. N. i. 370. ♂

L. aquatica β. Gmelin, S. N. i. 1106.; Shaw, Zool. iii. 298. f. 83. (not Linn.)

L. Triton Retz. F. Suec. i. 288.

L. Salamandra ε. Gmelin, S. N. i. 1106.

L. tæniata mas Sturm, Fauna, t.

L. maculata Sheppard, Linn. Trans. vii. 53.

Salamandra palmata Schneid. Amph. i. 72.

Salamandra tæniata Bechst.; Schneid. Amph. i. 58.; Sturm, Faun. Deut. t.

S. exigua Rusconi, t. 1. f. 1, 2. (not Laur.)

S. elegans Daud. Rept. viii. 255.

S. punctata Daud. Rept. viii. 257.; Cuvier, R. A. ii. 99.

S. palustris Bonelli.

Molge punctata Merrem, Tent. 186.

Triton punctatus Bonap. Fauna Ital. t. . f. 4., Amph. Eur. 70.;

Selys, Fauna Belg. i. 293. t. 5. f. 3, 4. ♂ ♀

Triton lobatus Oth.; Tschudi, Batr. 95.; Bonap. Fauna Ital. t. . f. 4.

Molge palmata Merrem, Tent. 186.

Salamandra palmipes Latr. Rept. ii. 240.; Daud. Rept. viii. 253. t. 98. f. 2.

Lacerta vulgaris Linn. S. N. i. 370. (female or male in winter, when on land.)

Triton palustris Laur. Rept. 39. t. 4. f. 2.

Salam. palustris Schneid. Amph. 60.

Triton exiguus Laur. Rept. 41. t. 3. f. 4.; Bonap. Faun. Ital. t. . f. 5. (young.)

Salam. abdominalis Daud. Rept. viii. 250.

Lissotriton punctatus Bell, Brit. Rept. 132. f. . (young.)

Liss. palmatus Bell, Brit. Rept. 139. f. iii. (aged.)

Brown Lizard Penn, B. Z. 29. iii. t. 3.

Common Newt Shaw, Zool. ii. 295.

Molge cinerea Merrem, Tent. 183.

LARVA: *Proteus tritonius* Laur. S. M. 37. t. 2. f. 2.

OSTEOL. Dugès, Batr. t. 14. f. 9, 10. (os hyoides.)

Var. 1. Sides and belly with large black spots.

Lissotriton palmipes *Bell, Brit. Rept.* 139. f. (aged.)

Salam. punctata *Latr.* 31. t. 6. f. 6 a.

a—d. In spirits. Male in summer, of various sizes. Worth. Presented by W. E. Leach, M.D.

e. In spirits. Male in winter? Near London.

Var. 2. Brownish, with small spots or mottlings on the back and a narrow white streak along the lower part of each side; none on the tail.

Salam. abdominalis *Latr.* t. 5. f. 4 a.?

f—h. In spirits. Near London.

Var. 3. Pale brownish with a darker streak on each side of the back, a few spots on the belly, and paler on the sides, sometimes forming interrupted lines. Lips often dilated.

S. elegans *Daud.*?

i. Spirits. Adult.

j. In spirits.

k—m. In spirits. Turin. Presented by Professor Bonelli

n—p. In spirits. Larva. Cobham, Surrey.

2. *LOPHINUS PALMATUS.*

Pale brown, varied. Head black, dotted and marbled. Fin on the back of male and female continued, entire, low on the back, higher on the tail. Toes of males united, completely webbed, moderate. Palatine teeth in two rather distant series.

? *Triton palustris* *Laur. Rept.* t. ♀

Salamandra exiguus *Laur. Rept.* t. ♀ (young.)

S. abdominalis *Daud. Rept.* t. ♀

S. cincta *Daud. Rept.* viii. 259. ♀ (not Latreille.)

Triton palmatus *Oth.*; *Bonap. Fauna Ital.* t. 1, *Amph. Eur.* 7
Selys, Fauna Belg. i. 293, t. 5. f. 1. ♂ f. 2. ♀; *Fitz. N. Clav.*
Tschudi, Batr.

Salamandra palmata *Cuvier, R. A.* ii. (not Schneider.)

a, b. In spirits. Nottingham. Presented by W. Higg
bottom, Esq.

10. *OMMATOTRITON.*

Skin smooth or minutely punctured.—*Sides* without any series of pores between the axilla and groin.—*Tongue* large, rounded at front.—*Parotids* indistinct, porous.—*Palatine teeth* in two longitudinal lines, quite close together in front, rapidly diverging towards the hinder end, crowded between the very convex large orbital

prominences of the palate.—*Toes* 4:5, free.—*Tail* compressed.—Male with a high toothed dorsal and caudal crest, interrupted over the loins.

Lissotriton (part.) *Bell, Brit. Rept.* 141.

1. OMMATOTRITON VITTATUS.

Pale grey, closely black-spotted. Tail nearly black. Side of abdomen and middle of tail with a broad white streak, beneath white. Throat black-dotted. Male in summer with a high toothed dorsal and caudal fin, the base interrupted over the loins. Toes separate, webbed, slightly finned.

Molge vittatus *Gray, B. M.* 1830.

Triton vittatus *Jenyns, Brit. Vert.* 305.; *Valenc. Mus. Paris*, fide *Guérin, Icon. Règ. Animal*, 17. t. 28. f. 2.

Lissotriton palmipes var. *Bell, Brit. Rept.* 141. fig.

a—c. In spirits. Lycia? England? Presented by J. E. Gray, Esq. a. Specimen figured by Mr. Bell.

According to M. Guérin this species is found in Lycia. *Icon. Règ. Anim.* p. 17.

B. Tongue large, hinder half free. *Toes* 4:4.—*Seiranotina*.

11. SEIRANOTA.

Head angular. Eyes large. Nostrils lateral. Tongue large, oblong, cordate; side edges, and hinder half free. Palatine teeth numerous, in two series, close, diverging and forming an equal-sided triangle behind. Teeth very minute. Parotid none.—Tail roundish, elongate.—Body densely warty. Back and tail with a bony crest.—Fingers and toes four, short, thick.—Ribs well developed, scarcely movable.

Seiranota *Barnes, Silliman's Jour.* xi. 268. 18.; *Bonap. Fauna Ital.* ii. 131., *Amph. Eur.* 33.

Salamandrina *Fitz. N. Class.* 1826, *S. R.* 33.; *Bonap. Fauna Ital.*; *Gravenh. Del. Mus. Wratt.* 88.

Salamandra sp. *Savi, Cuvier, R. A.* ii. 115.

1. SEIRANOTA PERSPICILLATA.

Black. Head with a triangular reddish spot; beneath white, black-spotted; under part of thighs and tail reddish.

Le Trois Doigts *Lacép. Q. ov.* 1496. t. 36.; *Latr. Rept.* ii. 258. f.

Salamandra ter-digitata *Bonn. Oph. t.* f.

S. tridactyla *Daud. Rept.* viii. 261.

Molge tridactylus Merrem, *Tent.* 183.

Salamandra perspicillata Savi, *Bib. Ital.*; Cuvier, *R. A.* ii. 118.

Seiranota condylura Barnes, *Silliman's Amer. J. S.* xi. 268.

Salamandrina perspicillata Fitz. *N. Class.* 41., *S. R.* 33.; Bonap. *Faun. Ital.* t. .; Gravenhorst, *Delic. Wrat.* 88.

Seiranota perspicillata Bonap. *Faun. Ital.* ii. 131., *Amph. Eur.* 66.

a—e. In spirits. Lucca. Presented by J. Browning, Esq.

f, g. In spirits. Dalmatia. From Dr. Heckles's Collection.

FAM. II. MOLGIDÆ.

Head depressed.

Orbit not bony above.

Tongue large, adherent.

Palatine teeth in two converging series, each line being in the outer hinder edge of the elongated angular vomerine bones. *Sphenoid* toothless. t. 3. f. 14.

Ribs rudimentary or wanting.

Synopsis of Genera.

1. *HYNOBIUS*. Parotids none.

2. *MOLGE*. Parotids large, glandular.

1. *HYNOBIUS*.

Head depressed; crown convex. Muzzle rounded. Tongue very large, elongate, quite entire, adherent. Palatine teeth in two central series, arched in front to the inner nostrils. Parotids indistinct. — *Sides* plaited. — *Limbs* short, thick. — *Tail* short, ensiform, round at the base.

Hynobius Tschudi, *Batr.* 60. 94.; Bonap. *Faun. Ital.* ii. 131. n. 12.; Fitz. *S. R.* 34.

Salamandra (part.) Schlegel, *Faun. Jap.*

1. *HYNOBIUS NEBULOSUS*.

Pale brown, slightly clouded, rather paler beneath.

Hynobius nebulosus Tschudi, *Batr.* 94.

Sal. neb. Schlegel, *Fauna Jap.* t. 4. f. 7—9., *Abbild.* t. 40. f. 7—8. (9, 10. jun.)

a, b. In spirits. Japan. From the Leyden Museum.

2. MOLGE.

Head thick. Parotids large, depressed. Tongue large, adherent along the centre. Teeth of the palate in two long oblique diverging series, rather arched in front to the inner nostrils. (t. 3. f. 14.)—*Feet* short, thick.—*Collar* large.—*Tail* thick, rounded, extreme tip compressed.—*Skin* very smooth.

Pseudo-Salamandra *Tschudi*, *Batr.* 56. 91. 1838; *Fitz. S. R.* 33.

Molge sp. *Merrem*, *Tent.* 185.

Molge *Bonap. Fauna Ital.* ii. 131. n. 3.

1. MOLGE STRIATA.

Black; beneath whitish and black varied.

Pseudo-Salamandra *nævia* *Tschudi*, *Batr.* 92.

Molge *striata* *Bonap. Faun. Ital.* ii. 131.

Molge *striata* (part.) *Merrem*, *Tent.* 185.

Salamandra *nævia* *Schlegel, Fauna Japon.* t. 4. f. 1, 2, 3., t. 5. f. 9. 10., *Abbild.* t. 39. f. 4.

Salamandre schisteuse *Schlegel, Fauna Japon.* 127.?

OSTEOL. t. 3. f. 14. *Schlegel, Faun. Japon.* t. 5. f. 9, 10. (skull.)

a—d. In spirits. Japan. From the Leyden Museum.

FAM. III. PLETHODONTIDÆ.

Palatine *teeth* forming an interrupted cross series in front of the palate, between the internal nostrils, each series running across the hinder end of the broad vomerine bones. The sphenoid with two more or less broad, sometimes confluent, series of teeth, which are rarely wanting. t. 3. f. 15. Paratoid indistinct.—*Skin* smooth, rarely granular, without any series of pores.

Dr. Holbrook's description of the palatine teeth in many instances, and sometimes of the tongue, does not agree with the specimens in the British Museum.

Dr. Baird's Revision of N. American Tailed Batrachia, in *Jour. Acad. N. S. Philad.* n. s. i. 281., Oct. 1849, appears more accurate.

Synopsis of Genera.

A. Tongue broad, adherent, only slightly free on the sides.
Sphenoid toothless.

a. Toes and Fingers clawed. Hind Legs dilated.

1. ONYCHODACTYLUS. Toes 4: 5, free.

b. *Toes and Fingers not clawed.*

2. HETEROTRITON. "Toes 4:5, slightly webbed; outer toe fringed. Tongue large, circular; front slightly movable. Sphenoid (? Palatine) teeth in a transverse group."
 3. XIPHONURA. Toes 4:5. Tongue circular. Tail much compressed.
 4. AMBYSTOMA. Toes 4:5, free. Tongue oblong. Tail tapering rounded below, keeled above.
- B. *Tongue broad, expanded, attached the whole length by a central line; sides and back edges free. Sphenoid toothed.*
5. PLETHODON. Toes 4:5, free. Hinder part of tongue shortly free.
- C. *Tongue broad, expanded; front half attached by a central line, hinder half free, exsertile. Sphenoid toothed.*
6. DESMOGNATHUS. Toes 4:5.
 7. HEMIDACTYLUM. Toes 4:4, free. Hinder part of tongue large, and great part free.
- D. *Tongue peltate, subcircular, free all round, only attached by a cylindrical central pedicel from a sheath.*
8. BATRACHOSEPS. Toes 4:4, free. Body very long. Legs far apart.
 9. SPELERPES. Toes 4:5, free. Body thick.
 10. GEOTRITON. Toes 4:5, hinder ones webbed to the tip.
 11. ŒDIPUS. Toes 4:5, very short, webbed to the end.
- E. *Tongue peltate, very large, attached by a central cylindrical pedicel and by a slight process on the front edges.*
12. ENSATINA.

- A. *Tongue broad, adherent, hinder side edges only free. Sphenoid toothless. Carpus and Tarsus ossified in the adult. — Ambystomina.*

a. *Toes and Fingers clawed. Hind Legs dilated,*

1. ONYCHODACTYLUS.

Head broad, rounded; crown flat. Eyes large, prominent. Parotids none. Tongue large, ovate, acute. Palatine teeth in two

arched series; sphenoid toothless. t. 3. f. 15. Collar and lateral plaits distinct.—*Feet* long, thick.—*Toes* 4 : 5, free, clawed. The hinder edge of outer hind foot dilated.—*Tail* elongate, roundish.

Onychodactylus Tschudi, *Batr.* 57. 92.; *Bonap. Faun. Ital.* ii. 331. n. 5.; *Fitz. S. R.* 33.

Dactylonyx Bibron, *MS.* fide *Bonap.*

Onycopus Dum. & Bib. MS., Erp. Gen. viii. 4.

1. ONYCHODACTYLUS JAPONICUS.

Purplish. Back with a broad pale streak expanded over the crown. Claws black.

Onychodactylus Schlegeli Tschudi, *Batr.* 92.

Salam. unguiculata Schl. Fauna Japon. vii. 65. f. 1—6.

Lacerta japonica Gmel. Houttuyn, Vert. ix. t. 9. f. 3.

Lac. Thunbergii Donnd.; Thunb. N. Schw. Abh. viii. t. 4.

Molge striata (part.) *Merrem, Tent.* 185.

Onychodactylus japonicus Bonap. Fauna Ital. ii. 131.

Onycopus Sieboldii Dum. & Bib. MS., Erp. Gen. viii. 4.

OSTEOL. t. 3. f. 15. *Fauna Jap.* t. 3. f. 6.

a, b. In spirits. Adult and larva. Japan. From the Leyden Museum.

b. *Toes and Fingers not clawed.*

2. HETEROTRITON.

“*Head* large, depressed. *Muzzle* full, rounded, flattened above. *Nostrils* anterior, superior. *Eyes* large. *Mouth* large. *Tongue* broad, circular, only slightly movable on its anterior and lateral margin. *Palatine teeth* in a small group, behind each internal nostril. *Sphenoid teeth* in a large transverse group, in the middle of the palate.—*Fore limbs* short, thick. *Fingers* four.—*Hinder limbs* much larger. *Toes* five. *Outer hinder toe* fringed on its outer edge.—*Tail* compressed.” *Holbrook.*

Triton sp. *Holbrook, N. A. Herp.* 85.

Salamandra sp. *Green, J. Acad. N. S. Phil.* vi. 254.

1. HETEROTRITON INGENS.

Bluish slate-coloured, with pale subovate spots. Belly slate-coloured.

Salamandra ingens Green, J. Acad. N. S. Phil. vi. 254.

Triton ingens *Holbrook, N. Amer. Herp.* v. 85. t. 29.

Hab. Western Waters of N. America, Tennessee, Louisiana.

3. XIPHONURA.

Head large, rounded; crown convex. *Palate* flat, broad. *Palatine teeth* in a continued transverse line, behind the internal nostrils. *Sphenoid* with a few scattered teeth. *Tongue* large, broad, attached, free on the edges. — *Feet* strong, large. *Toes* elongate, free; end callous. — *Skin* densely granular. — *Tail* much compressed, elongate, ensiform.

Dr. Holbrook incorrectly describes the "Tongue small, round, pedunculated, slightly attached in front. Palatine teeth minute, in a transverse row behind the nares. Sphenoid with two longitudinal series to the hinder part of the palate."

Xiphonura Tschudi, *Batr.* 61. 95.; *Bonap. Fauna Ital.* ii. 131. n. 17.; *Fitz. S. R.* 34.

Salamandra sp. *Green, Harlan, Holbrook.*

Triton sp. *Holbrook, N. A. Herp.* 77.

Ambystoma B. *Baird, J. A. N. S. Phil.* 1849, 281.

1. XIPHONURA JEFFERSONIANA.

Head very large. *Eyes* full and prominent. *Body* cylindrical, elongate. *Light brown* above, with azure spots. *Tail* as long as the body, compressed at the tip.

Salamandra Jeffersoniana *Green, MacLurian Lyceum*, i. 4. 1827; *Harlan, M. and P. Res.* 98., *N. A. Rept.* 85. note; *Holbrook, N. A. Herp.* v. 51. t. 14.; *Schlegel, Faun. Japon.* 120.

S. variolata var. *Harlan, N. A. Rept.* 18.

Xiphonura Jeffersoniana Tschudi, Batr. 93.

Triton niger *DeKay, Rept. N. York*, 85. t. 1. 5. f. 35. 1842.

Ambystoma Jeffersoniana Baird, Amer. Batr. 283.

a. In spirits. Not good state. N. America. From the Leyden Museum.

4. AMBYSTOMA.

Head thick, convex. *Skin* smooth. *Parotids* indistinct, place marked by a few pores. *Tongue* ovate, moderate, attached, free on the side, rather contracted behind. *Palatine teeth* numerous, in a rather short cross series. *Inner nostrils* small, far apart. *Sphenoid* toothless. — *Toes* free. — *Tail* oblong, roundish. — *Sides* with cross folds. — *Skin*, in some species, with closely set glands secreting a milky fluid. — *Eggs* deposited in packets under damp stones. (*Baird.*)

Ambystoma Tschudi, Batr. 57. 1838; *Bonap. Faun. Ital.* ii. 131. n. 4.

- Ambystoma* α *Baird, Amer. Batr.* 281. 283. 1849.
Salamandroides Fitz. S. R. 33.
Salamandra sp. *Bonnat; Merrem, Tent.* 185.
Pseudotriton Tschudi, Batr. 93.
Plethodon (part.) *Tschudi, Batr.* 92.
Plethodon Baird, J. A. N. S. Phil. i. 282. 1849.
Saurophis Fitz. S. R. 33.
Salamandra, § 2. *Holbrook, N. A. Herp.* 67.
Triton sp. *Holbrook, N. A. Herp.* 79.

§ *Stout, black, pale spotted, or varied.*

1. AMBYSTOMA CAROLINÆ.

Head moderate, muzzle slightly rounded. Body and tail above bluish black. Sides with a row of round or oval yellow spots; beneath purplish black.

- Lacerta Carolinæ Linn. S. N.* ed. 10.
Stellio (Spotted Eft) *Catesby, Carol.* t. 10.; *Penn. Act. Zool.* ii. 534.
Lacerta punctata Linn. S. N. i. 370.; *Gmelin, S. N.* 1076.; *Laur. Rept.* ii. 252.
Lac. maculata Shaw, Zool. iii. 304.
Le Pontué Lacép. Quadr. ov.
Salamandra punctata Bonnat, Erp. 63., *Ency. Méth.* t. 12. f. 1.; *Merrem, Tent.* 185.
Salamandra venenosa Barton, Amer. Phil. Trans. iv. t. 1.; *Daud. Rept.* viii. 229. 1803?; *Holbrook, N. A. Herp.* iii. 105. t. 24. ed. 2. v. 67. t. 22.
Lacerta subviolacea Barton, Trans. Amer. Phil. Soc. vi. 112. t. 4. f. 6.;
Salamandra subviolacea Harlan, M. and P. Res. 93., *N. A. Rept.* 11.; *Schlegel, F. Japon.* 118.
Salamandra Argus Bell's MS. Mus. Zool. Soc. n. 659.
Ambystoma subviolaceum Tschudi, Batr. 92.; *Bonap. F. Ital.* 131.
Ambystoma punctata Baird, Amer. Batr. 283.

- a—e. In spirits. N. America, Pennsylvania.
 f, g. In spirits. N. America. Presented by Thomas Bell, Esq.
 h, i. In spirits. N. America. From Mus. Leyden.
 j, k. In spirits. N. America. Old Collection.
 l. Variety with small spots.

2. AMBYSTOMA TIGRINUM.

“ Head large. Muzzle rounded. Body elongated, bluish black, with irregular lemon-coloured spots. Tail longer than the body,

compressed, two-edged, coloured like body. Tongue broad, sub-round, entire, adherent posteriorly, less so in front, only loose and movable on the sides. Palatine teeth from outer margin of inner nostrils inwards and backwards. Sphenoid teeth in a larger transverse slightly arched group, rather in front of the end of the former."

Salamandra tigrina Green, *J. Acad. N. S. Phil.* v. 116.; *Harlan, N. A. Rept.* 12., *M. and P. Res.* 93.

Triton tigrina Holbrook, *N. A. Herp.* v. 79. t. 26.

Ambystoma tigrina Baird, l. c. 284.

Hab. New Jersey, Massachussets.

3. AMBYSTOMA ? TALPOIDEUM.

"Dusky, nearly black; beneath dusky, purplish. Head very large, flattened. Muzzle full, rounded. Mouth large. Tongue sub-rhomboidal, smaller and perfectly adherent behind, lateral and front edges free. Internal nostrils large. Palatine teeth minute, in a line, slightly arched backward in the middle, where the teeth are largest and more numerous. Sphenoid toothless. Eye small. Body short, thick, clumsy. Tail short, thick, compressed. Fore limbs short, thick, stout. Fingers four, short. Hinder limbs stouter. Toes five, slightly united at their base."

Salamandra talpoidea Holbrook, *N. A. Herp.* v. 73. t. 24.

Hab. South Carolina, on the sea islands. Terrestrial, burrowing under the ground like moles.

4. AMBYSTOMA OPACUM.

Head short, broad. Muzzle large, rounded. Body and tail pale ash, with irregular bluish-black cross bands. Throat and abdomen purplish blue. Tail as long as body, compressed.

Salamandra opaca Gravenh. *Ueber Zool. Syst.* 431. 1807, *Delic Mus. Urat.* i. 75. t. 10.

Salamandra Gravenhorstii Leuckart in *Fitz. N. Class. Rept.* 1825.

Salamandra fasciata Green, *Jour. Acad. N. S. Phil.* i. 350. 1818;

Harlan, N. A. Rept. 13., *Med. and Ph. Rep.* 94.; *Holbrook, N. A. Herp.* v. 71. t. 23.; *DeKay, Rept. N. York*, 77. t. 17. f. 40.

Ambystoma opaca Baird, l. c. 280.

Ambystoma subviolacea (var?) *Tschudi, Batr.* 92.

a, b. In spirits. N. America. Presented by Dr. Mac Murtrie.

c. In spirits. N. America. Presented by Thos. Bell, Esq.

d. In spirits. N. America.

e, f. In spirits. N. America. From the Leyden Museum.

g, h. In spirits. N. America.

5. *AMBYSTOMA PUNCTULATUM*.

Lead-coloured, smooth. Lower part of sides and beneath white. Cheek and upper part of sides with distant scattered white dots. Head depressed. Eyes large, prominent. Tail as long as the body, slender, rather tapering and compressed, rounded above and below.

a. In spirits. Monterey, California.

6. *AMBYSTOMA MACRODACTYLUM*.

Dark brown. Back with a broad (chestnut-brown) obscure stripe. Sides greyish-sprinkled; beneath dark brown, spotless. Toes long, not webbed. Tail roundish, not compressed. Skull longer than broad.

Ambystoma macrodactyla Baird, *J. A. N. S. Phil.* 1849, 292.

Hab. Oregon. Astoria. Mus. Acad. N. S. Philadelphia.

7. *AMBYSTOMA MAVORTIUM*.

Dull black or dark brown (in spirits), yellow-blotched above and below. Back with about 9, tail with 13, transverse yellowish bands. Body thick. Feet short; toes short, broad. Tail much compressed, longer than body and head. Skull broader than long.

Ambystoma mavortia Baird, *J. A. N. S. Philad.* 1849, 293.

Hab. New Mexico. (Dr. Wealizenus.)

8. *AMBYSTOMA EPISCOPUS*.

Yellowish, with dark mottlings and darker spots. Tail much compressed, shorter than the body. Skull longer than broad. Head wedge-shaped.

Ambystoma episcopus Baird, *J. A. N. S. Philad.* i. 292. 1849.

Hab. Mississippi, Kemper county. (C. Lloyd.)

§§ *Slender, brown.*—*Saurophis Fitz.*

9. *AMBYSTOMA ERYTHRONOTUM*.

Head short. Muzzle blunt. Body cylindrical, with a broad brown vertebral streak to end of tail; sides yellowish; abdomen white. Tail shorter than the body, tapering, pointed. Young reddish.

Salamandra erythronota Green, *Jour. A. N. S. Philad.* i. 356. 1818; *Harlan, M. and P. Res.* 95., *N. A. Rept.* 13.; *Holbrook, N. Amer. Herp.* v. 43. t. 11.

S. cinerea Green, l. c. 1. 356. 1818; *Harlan, l. c.* 95., *N. A. Rept.* 12.; *Schlegel, Faun. Japon.* 118.

Plethodon cinereus *Tschudi, Batrac.* 92.; *Baird, Batr. Am.* 385.

Plethodon erythronota *Baird, l. c.* 285.

Saurophis erythronota *Fitz. S. R.* 33.

a—c. In spirits. N. America. Presented by Edward Doubleday, Esq.

d. In spirits. N. America.

e—g. In spirits. N. America. Presented by Thos. Bell, Esq.

10. AMBYSTOMA? HALDEMANI.

Head flattened above. Muzzle rounded. Body and tail above pale yellow, with three irregular series of dusky spots and blotches. Sides rather dusky. Tongue broad, subrotund. Pedicel short. Palatine teeth minute, in a line, running rather backwards, not united. Sphenoid teeth minute, in a longitudinal group in centre of palate.

Salamandra haldemani *Holbrook, N. A. Herp.* v. 59. t. 18.

Hab. Pennsylvania, Maryland, Virginia.

11. AMBYSTOMA?? FRONTALIS?

Dirty ferruginous, beneath yellowish. Nose white. Tail shorter than the body, thick, tapering, and pointed. Length three inches.

Salamandra sinciput alba Green, *Jour. Acad. Philad.* 352. 1818; *Harlan, N. A. Rept.* 13.

S. frontalis Gray, *Griffith, A. K.* ix. 107.

Hab. New Jersey. (Green.)

B. Tongue broad, expanded, attached the whole of its length by a central line; the sides and hinder end free. Sphenoid toothed. Carpus and Tarsus not ossified.—*Plethodontina*.

5. PLETHODON.

Head broad, depressed. Parotids none. Tongue large, broad, expanded, attached nearly the whole of its length by a linear cen-

tral band; sides and hinder end free. Palatine teeth in two short series, generally interrupted in the middle, and sometimes rather directed backwards. Sphenoid covered with teeth in several series; group wide behind.—*Skin* smooth. Sides plaited.—*Tail* rounded.

Plethodon Tschudi, *Batr.* 58. 92.; *Bonap. Fauna Ital.* ii. 131. n. 6.; *Fitz. S. R.* 32.; *Baird*, l. c. 292.

Phatnomatorhina Bibron, *MS.* §, fide *Bonap.* l. c.

1. PLETHODON GLUTINOSUM.

Head large, semioval. Tail round, nearly twice as long as the body. Bluish black above. Back and tail minutely white-spotted; sides with larger confluent white spots.

Salamandra glutinosa Green, *Jour. Acad. N. S. Philad.* i. 357. 1818, Sept.; *Schlegel, Faun. Jap.* 118.; *Harlan, N. A. Rept.* 14.; *Holbrook, N. A. Herp.* v. 39. t. 10.; *Dekay, Rept. N. York*, t. 17. f. 42. (very young.)

S. variolata Gilliams, *J. Acad. N. S. Philad.* i. 460. 1818, Decemb.; *Harlan, N. A. Rept.* 18.

S. cylindracea Harlan, *Jour. Acad. N. S.* v. 156. 1825., *Med. and Phys. Res.* 94., *N. A. Rept.* 12.

"*S. cylindrica Harlan*," fide *Schlegel*.

Triton porphyriticus Dekay, *Rept. N. York*, 85. t. 16. f. 37.

Plethodon glutinosus Tschudi, *Batr.* 92.; *Bonap. Fauna Ital.* ii. 131.; *Fitz. S. R.* 32.; *Baird, Batr. Amer.* 285.

OSTEOL. Tschudi, *Batr.* t. 2. f. 4. (skull.)

a—c. In spirits. Pennsylvania, N. America. Presented by Jacob Green, M.D.

d—g. In spirits. N. America. Presented by Edward Doubleday, Esq.

h. In spirits. N. America. From the Leyden Museum. *Sal. cylindrica Harlan.*

i. Young series, with very minute, white dots.

2. PLETHODON GRANULATUM.

Head large. Skin granulated. Body elongated, cylindrical. Tail round, slender, rather longer than the body and head. Greenish slate colour above, varied with grey and brown beneath.

Salamandra granulata Dekay, *Herp. N. York*, ii. t. .; *Holbrook, N. A. Herp.* v. 63. t. 20.

Hab. New York. Var. *P. glutinosum*?

- C. *Tongue broad, expanded; front half attached by a central longitudinal line; hinder half broad, expanded, free, erectile, like those of frogs. Sphenoid toothed. Carpus and Tarsus not ossified*
— *Desmognathina*.

6. DESMOGNATHUS.

Toes 4 before, 5 behind. Gape narrow. Body subcylindrical. Sphenoidal teeth in two narrow patches attached to the edges of the sphenoidal bone. Occipital condyles very peculiar in consisting of short cylinders projecting from the exoccipitals with their axes parallel to that of cranium, and their extremities forming a spherically convex articulating surface. Crest of the first cervical vertebra transverse, with a strong ligament passing from each end across the posterior corner of the cranium to be inserted into the lower jaw. These ligaments prevent the opening of the jaw beyond a very slight amount. *Baird*, l. c. 282.

Desmognathus Baird, J. Acad. N. S. Philad. U. S. i. 282. 1849.

Triturus sp. Rafn. Annals of Nat. 1820.

Pseudotriton sp. Tschudi, Batr. 93.

Triton sp. Holbrook, N. A. Herp. 93.

Salamandra sp. Green.

1. DESMOGNATHUS NIGER.

"Black above. Sides with a few whitish spots. Abdomen purplish. Tail round at the base, compressed, two-edged at the tip. Tongue suboval, thin, broader behind, narrow and adherent in front, loose and most movable at its hinder edge. Palatine teeth in a transverse line. Sphenoid with a longitudinal series of teeth." *Holbrook*.

Salamandra nigra Green, J. A. N. S. Philad. 352. 1818; Harlan, M. and Ph. Res. i. 99., N. A. Rept. 16.; Schlegel, Faun. Japon. 119.

S. intermixta Green, Macburiian Lyceum, i. 5.; Harlan, N. A. Rept. 84.

S. picta Harlan, M. and P. Res. 98., N. A. Rept. 17.

Pseudotriton nigra Tschudi, Batr. 93.

Triton nigra Holbrook, N. A. Herp. v. 81. t. 27.

Desmognathus niger Baird, Batr. Amer. 286.

Hab. Atlantic States, from lat. 43° to Gulf of Mexico. *Aquatic.*
Mus. Acad. N. S. Phil.

2. DESMOGNATHUS FUSCUS.

"Head rather large; muzzle roundish. Body elongate, stout. Dusky purplish above, with two series of elongated four-sided

red spots. Tail with a red mesial line, compressed at the sides, tapering, acute. Tongue round, shortly pediceled. Palatine teeth very minute, in a line behind the nostrils, united in middle. Sphenoid teeth (half a line behind) in two longitudinal subparallel groups, rather wider behind." *Holbrook*.

Salamandra quadrimaculata *Holbrook*, *N. A. Herp.* v. 49.

S. quadramaculata *Holbrook*, *N. A. Herp.* v. t. 13.

Triturus fuscus *Raf. Annals of Nat.* 1820.

Sal. intermixta *Green, Hall's Portfolio*, xx. 259.; *Maccl. Lyc.* i. 827.

S. picta *Harlan, J. Acad. N. S.* v. 138. 1828.

Desmognathus fuscus *Baird*, l. c. 285.

Hab. Georgia, Carolina, Pennsylvania.

3. DESMOGNATHUS AURICULATUS.

Head small. Body and tail cylindrical, dusky brown, with a reddish brown spot near the ear; sides with a series of minute reddish dots.

Salamandra auriculata *Holbrook, N. Amer. Herp.* v. 47. t. 11.

Plethodon? *auriculatus* *Rüppell, Verz. Mus. Senh.* 24.

Desmognathus articulatus *Baird*, l. c. 286, 1849.

a—d. In spirits. New Orleans. Presented by Edward Doubleday, Esq.

7. HEMIDACTYLUM.

Head small, rounded, truncated.—*Body* short, round.—*Tail* fusiform, compressed. Body and tail plaited on the sides.—*Skin* smooth.—*Sphenoid teeth* in many series.—*Tongue* very long, acute in front, broad behind; front half adherent by a central linear band, sides and under part free.—*Feet* slender.—*Toes* 4:4; short, webbed at the base. Costal furrows deep, extending to dorsal line

Hemidactylum *Tschudi, Batr.* 59. 94. 1838.; *Bonap. Fauna Ital.* ii. 131. n. 10.; *Fitz. S. R.* 33.; *Baird*, l. c. 284, 1849

1. HEMIDACTYLUM SCUTATUM.

Pale brown, beneath yellowish, black-spotted.

Hemidactylum scutatum *Tschudi, Batr.* 94.; *Bonap. Fauna Ital.* ii. 131.

Salamandra scutata *Schlegel, Mus. Leyd. Abbild.* t. 40. f. 4. 6., *Fauna Japonica*, ii. 119.

Salamandra melanosticta Gibbs, *Boston Jour. N. H.* v. 89. t. 10.

a. In spirits. N. America, Niagara. Back with three indistinct series of black specks. Sides dark, clouded.

D. *Tongue peltate; top subcircular, dilated; free all round, and attached by a central subcylindrical pedicel, which is surrounded by a sheath. "Tongue entirely protractile, capable of considerable protrusion, and supported on the top of the constricted ligament apparatus. Sphenoidal teeth on two plates, not in contact, disappearing behind."* Baird.—Ædipina.

8. BATRACHOSEPS.

Head very short. *Eyes* prominent.—*Skin* smooth.—*Body* and *tail* elongate, slender, roundish, plaited on the sides.—*Limbs* slender, far apart.—*Toes* 4:4, short, slender, free.—*Tongue* peltate.—*Palatine teeth* very small, in a small transverse arched series.

Batrachoseps Bonap. *Fauna Ital.* ii. 131. n. 9. 1841; *Fitz. S. Rep.* 33.; *Baird, Jour. Acad. N. S. P.* 1849, 283. 287.

Salamandrina Eschsch. *Zool. Atlas*, 21. (not Savi.)

1. BATRACHOSEPS ATTENUATUS.

Blackish brown. Back and upper part redder, with a black dorsal line and diagonal cross lines. Body and tail elongate, slender, round. Feet very small, thin. Toes 4:4, subequal, free.

Salamandrina attenuata Esch. *Zool. Atlas*, t. 21. f. 1—14.

Batrachoseps attenuatus Bonap. *Fauna Ital.* ii. 131. 1841; *Fitz. S. R.* 33.

B. attenuata Baird, l. c. 288.

OSTEOL. Esch. *Zool. Atlas*, t. 21. f. 5, 6.

a—c. In spirits. Young and adult. St. Francisco, California.

2. BATRACHOSEPS QUADRIDIGITATUS.

Pale straw colour, beneath bluish and silvery, vertebral and lateral line brown dotted. Body long, slender. Tail very long.

Salamandra quadridigitata Holbrook, *N. Amer. Herp.* v. 65. t. 21. *Batr. quadridigitata* Baird, *J. A. N. S. Phil.* 1849, 287.

Hab. Georgia, Florida, S. Carolina.

9. SPELERPES.

Head moderate. Eyes moderate, pupil oblong, horizontal. Parotids none. Tongue large, peltate, free all round, on a cylindrical central pedicel. Palatine teeth in a transverse series, between the internal nostrils. Sphenoidal teeth in two or more longitudinal series.—**Body** subcylindrical, plaited on the sides.—**Toes** 4 : 5, free.—**Tail** subcylindrical, tapering, keeled above and rounder beneath.

Spelerpes Rafin. *Atlant. Jour.* i. 22. 1832; *Baird, Jour. A. N. S. Phil.* 1849, 287.

Pseudotriton Tschudi, *Batrac.* 60. 94. 1838; *Baird, Jour. A. N. S. Phil.* 1849, 286.

Batrachopsis Fitz. *Syst. Rept.* 34. 18.

Cylindrosoma Tschudi, *Batrac.* 60. 94. 1838; *Bonap. Fauna Ital.* ii. 131. n. 7.

Mycetoglossus Bibron, *MS.*, fide *Bonap. Fauna Ital.* ii. 131.

Molge sp. *Merrem, Tent.* 185.

Plethodon saurocercus Fitz. *S. R.* 34.

Triton sp. *Troost.*

Salamandra sp. *Green, Holbrook, Storer.*

LARVA :

Siren sp. *Pal. de Beauv. Amer. Phil. Trans.* iv. 279. 1796.

Proteus sp. *Green, Jour. A. N. S. Phil.* i. 358. 1818.

§ *Tail elongate, compressed, rounder beneath.*—**Spelerpes.**

1. SPELERPES LONGICAUDA.

Nose moderate, depressed. Eyes large. Body elongate, lemon-coloured above, marked with small, irregular, oblong or round, black spots. Tail more than twice as long as the body, compressed, with black cross bands.

Salamandra longicauda *Green, Jour. A. N. S. Philad.* i. 351. 1818; *Harlan, N. A. Rept.* 15., *M. and Ph. Res.* 16.; *Holbrook, N. A. Herp.* v. 61. t. 19.; *Schlegel, Faun. Japon.* 118.; *Dekay, Rept. N. Y.* 78. t. 17. f. 41.

Spelerpes lucifuga Raf. *Atlant. Jour.* i. 22. 1832.

Spel. longicauda *Baird, l. c.* 287.

Cylindrosoma longicauda Tschudi, *Batr.* 93.; *Bonap. Fauna Ital.* ii. 131.

Plethodon (Saurocercus) longicauda Fitz. *S. R.* 34.

a. In spirits. Half-grown; middle of back and upper part of

tail nearly spotless. N. America. Presented by Jacob Green, M.D.

Salamandra longicauda Holbrook, *N. A. Herp.* t. 19.

b. In spirits. Adult; back, sides, and upper part of tail with large black irregular spots; upper lips with two cirri. N. America.

c, d. In spirits. Half-grown; like *b*, but with an indistinct spotless band on each side of the back. N. America. Presented by Edward Doubleday, Esq.

e. In spirits. Yellow; back with four irregular series of black spots, spots of the vertebral series smaller and closer together. N. America, Ohio. From Leyden Museum.

f. In spirits. Half-grown; back and upper part of tail slightly spotted; spots on side and sides of tail crowded, subconfluent. N. America, Ohio. From Leyden Museum.

g, h. Young (var.?). Belly black-spotted. N. America.

2. SPELERPES CIRRIGERA.

"Head short; muzzle rounded. Upper jaw 2-bearded between nostrils and lips. Body above pale yellow, mottled with black dots, with a dusky lateral line. Tail compressed; longer than the body. Tongue elongated, oval, thin, very mobile. Palatine teeth transverse, from inner edge of internal nares. Sphenoid teeth very minute, in a broad longitudinal streak to hinder end of palate."

Salamandra cirrigera Green, *J. Acad. N. S. Philad.* iv. 251. 1831;

Harlan, *M. and P. Res.* 97.; Holbrook, *N. A. Herp.* v. 53. t. 15.

Spelerpes cirrigera Baird, *Jour. A. N. S. Phil.* 1849, 287.

Hab. Louisiana and Mississippi. Probably only a variety of the preceding, which often has two beards on the upper lip.

3. SPELERPES BILINEATA.

"Head small. Body cylindrical. Tail longer than the body, tip slightly compressed. Above brownish yellow, sides with a black line, belly yellow. Tongue small, suboval, thin, pediceled, very movable. Palatine teeth in a cross line from inner edge of nostrils. Sphenoid teeth in two longitudinal lines to back of palate."

Salamandra bilineata Green, *Jour. Acad. N. S. Phil.* i. 325. 1818; Harlan, *N. A. Rept.* 16.

S. bilineata Holbrook, *N. A. Herp.* v. 55. t. 16.

S. flavissima Harlan, *Silliman's Amer. Jour. Sci.* 1825., *N. A. Rept.* 17., *M. and P. Res.* 97.

Mycetoglossus bilineata Bonap. *Faun. Ital.* ii. 131. †

Spelerpes bilineata Baird, l. c. 287. 1849. †

Hab. Massachussets, N. and S. Carolina.

4. SPELERPES GUTTOLINEATA.

Nose short. Eyes large. Body pale straw-coloured above, with black vertebral line bifurcating behind the occiput; a black lateral band enclosing a row of white spots, and edged with white, beneath. Tail nearly twice as long as body and head.

Salamandra guttolineata Holbrook, *Amer. Herp.* v. 29. t. 7.

Spelerpes guttolineata Baird, l. c. 1849, 287.

a. In spirits. N. America.

§§ Tail not longer than the body, conical, keeled above. Skull as long as broad. — *Pseudotriton Tschudi.*

5. SPELERPES RUBRA.

Nose rounded. Eyes small. Red above, darker-clouded, with numerous black dots. Sides red, spotless, and abdomen red, black-dotted. Tail about as long as the body, keeled above at the end.

Salamandra rubra Latr. *Rept.* iv. 305.; *Daud. Rept.* viii. 227. t. 92. f. 2. 1803; *Harlan, N. A. Rept.* 16.; *Holbrook, N. A. Herp.* v. 35. t. 9.; *Dekay, Rept. N. Y.* Oct. 17. f. 43.

Molge rubra Merrem, *Tent.* 183.

S. rubriventris Green, *J. Acad. N. S. Philad.* i. 383. 1818, adult living; *Harlan, Med. and Phys. Res.* 97.

S. maculata Green, *Jour. Acad. N. S. Philad.* i. 350. 1818, bleached; *Harlan, M. and P. Res.* 97., *N. A. Rept.* 15.

Pseudotriton maculata Tschudi, *Batr.* 95.

S. subfusca Green, *Jour. A. N. S. Phil.* i. 357. 1818, adult in spirits; *Harlan, N. Amer. Rept.* 15.; *Schlegel, Faun. Japon.* 119.

S. fusca Green, *Jour. Acad. N. S. Phil.* i. 357.; *Harlan, M. and P. Res.* 97., *N. A. Rept.* 14.

Triton subfuscus Troost.

Pseudotriton subfuscus Tschudi, *Batr.* 95.; *Fitz. S. R.* 34.

Mycetoglossus subfuscus Bonap. *Fauna Ital.* ii. 131.

Mycet. ruber Bibron.

LARVA:

Siren operculata Pal. de Beauv. *Amer. Phil. Trans.* iv. 279. t. f. 3. 1796.

Proteus neocæsareanus Green, *Jour. A. N. Phil.* i. 358. 1818.

a—i. In spirits. Different ages. N. America. Presented by Jacob Green, M.D.

S. maculata Green.

j. In spirits. N. America. Presented by Prof. Verauxen.

6. SPELERPES MONTANA.

Reddish brown, with scattered well-defined black or dark brown circular spots; beneath deep salmon colour. Tail as long as the body. Toes dark, without the longitudinal bar. Costal grooves 17.

Pseudotriton montanus Baird, *Jour. A. N. S. Philad.* 1849, 287.

Hab. N. America, Pennsylvania. (Baird.)

7. SPELERPES ? SALMONEA.

"Body and tail yellowish brown above; yellowish salmon-coloured on the sides, and with a salmon-coloured line on each side from orbit to nose. Tail rather longer than the body, compressed at the end."

Salamandra salmonea Storer, *MS.; Holbrook, N. A. Herp.* ed. 1.

iii. t. 22. 1838, ed. 2. v. 33. t. 8.; *Dekay, Rept. N. Y.* 76. t. 16. f. 33.

Pseudotriton salmoneus Baird, l. c. 287.

Hab. N. America, Vermont.

Probably *S. porphyritica* Green, *Cont. Maccl. Lyc.* i. t. 1. f. 2.

8. SPELERPES ? PORPHYRITICA.

"Head moderate. Muzzle blunt. Body elongated. Tail as long as body, compressed, and slightly keeled on the upper and hinder half of lower edge. Above dark brown, with irregular white spots. Tongue broad, elongated, thin, attached posteriorly, less so anteriorly, and most movable on the sides. Palatine teeth in a continued transverse line. Sphenoid toothless. Nostrils lateral, superior, with a slight ridge from them to the orbit."

Salamandra porphyritica Green, *Macclurian Lyceum*, i. 3. t. i. f. 2.; *Harlan, Med. and Ph. Rep.* 98.

Triton porphyriticus Holbrook, *N. Amer. Herp.* v. 83. t. 28.

Hab. Pennsylvania, French Creek. (Green.)

9. SPELERPES BELLII.

Blackish back, with two series of oblong yellow spots, front ones confluent. Nape with a broad triangular yellow mark, with a

large oblong yellow spot on each side. Toes short. Palatine teeth —.

a. In spirits. Tail reproduced, ? brown, tapering, rounded above and below. Mexico. Presented by T. Bell, Esq.

10. GEOTRITON.

Head rounded. Muzzle high, truncated. Eyes large, prominent. Parotids none. Tongue large, circular, peltate, only affixed in the middle, very mobile. Teeth very minute; palatine placed in four series, two anterior and two posterior.—*Body* rounded. Sides plaited. Skin smooth, thin, soft. Ribs none.—*Limbs* slender, thin, long.—*Toes* 4 : 5, short, thick, all united by a web.—*Soles of feet* without warts.—*Tail* roundish, attenuated.

Geotriton Bonap. Faun. Ital. t. 31. n. 14., *Amph. Eur.* 67.; *Tschudi, Batr.* 59. 93. 1838; *Fitz. S. R.* 33.

Salamandra sp. *Gesner, Schlegel, Cuvier.*

1. GEOTRITON FUSCUS.

Brown, with obscure reddish marks, beneath ash with very minute white dots. Muzzle obliquely truncated below. Nostrils lateral. Eyes prominent. Tail rather shorter than the body.

Salamandra fusca Gesner, Quad. ov.; Aldrov., Laur. Rept. 4

Lacerta Salamandra γ. Gmelin, S. N. 1. 1067.

Salamandra Savii Gosse, Cuvier, R. A.

Salamandra Genei Schlegel.

Geotriton Genei Tschudi, Batr. 94. t. 5. f. 3., *Mém. Soc. Neuch.*

G. Savi Bonap. Faun. Ital. t.

Geot. fusca Bonap. Amph. Eur. 66.

S. atra (part.) *Merrem, Tent.* 184.

? *S. funebris Bory, D. Class. Hist. Nat.*

Hab. Italy. Mus. Bonaparte, Rome.

11. ŒDIPUS.

Head flat, broad. Muzzle truncated. Eyes prominent. Neck long, slender. Palatine teeth many, extending to the inner hinder angle of the inner nostrils. Tongue small, ovate, only affixed in the middle.—*Feet* small. Toes — ? indistinct; very small, broad, rounded, webbed.—*Skin* very smooth, minutely punctated; lateral line none.—*Tail* subcylindric, elongate.

"Sphenoidal teeth on two plates, not in contact, diverging behind. Toes dilated at the top into sucker-like disks, as in *Hyla*" *Baird*, l. c. 282.

Cedipus Tschudi, *Batr.* 58. 93. 1838; *Bonap. Fauna Ital.* ii. 131. n. 8.; *Fitz. S. R.* 34. (not Lesson, 1840.)

Salamandra sp. *Cuvier, R. A.*

1. CEDIPUS VARIEGATUS.

Yellow brown, with three irregular slightly inosculatory dorsal streaks.

Salamandra platydactyla Cuv. Mus. Paris.

Cedipus platydactylus Tschudi, Batr. 93. 1834; *Fitz. S. R.* 34.; *Bonap. Fauna Ital.* ii. 131.; *Baird*, l. c. 286.

Salam. variegata Gray, Griffith, A. K. ix. 107.

a. In spirits. Tail reproduced, short, conical, thick. Mexico.

b. In spirits. Tail perfect, tapering, longer than body and head. Mexico.

E. *Tongue broad, peltate, attached by a round central pedicel, and by a small frenum on the front edge.*—*Ensatinina.*

12. ENSATINA.

Head depressed. *Nose* short. *Eyes* large, prominent. *Parotids* none.—*Skin* smooth. *Sides* folded across.—*Toes* 4 : 5, elongate, free, slender.—*Tail* subcylindric, rounded beneath, attenuated.—*Tongue* very large, round, expanded, attached by a round central pedicel, and a slight round belt on the front margin.—*Palatine teeth* in two regular transverse arched series, partly behind the inner nostrils. *Sphenoid* toothless.

1. ENSATINA ESCHSCHOLTZII.

Smooth, ferruginous. Back marbled. Tail pointed, nearly as long as the body; beneath thick, above rather compressed.

Triton ensatus Eschscholtz, Zool. Atlas, 6. t. 22. f. 1—12.

a, b, c. In spirits. California. Half-grown and young.

Animals apparently of this Suborder, which have only been observed in their Larva state.

1. AXOLOTL *Cuvier, R. A.* ii. 119.; *Humb. Obs. Zool. Oss. Fos.* v. 1811; *Mayer, Anal.* 87.; *Home, Phil. Trans.* 1824.
Gyrinus Hernand. N. S. 77.; *Shaw, Nat. Misc.* iii. 313. (not Linn.)
Siredon Wagler, Icon. t. 20. *Syst.*; *Tschudi, Batrac.* 97.; *Fitz. S. R.* 34.
Phyllhydrus Brook, Cat. Mus.; *Gray in Griffith's A. K.* ix. 108.
Triton Larva? *Gray, Ann. Phil.* 1825. 215.
Molge Larva Merrem, Tent. 187.
Piscibus ludicus seu Axolotl Hernand. Hisp. 76.
Gyrinus edulis seu Atolocatl Hernand. Anim. N. Hispan. 77.
Phyllhydrus pisciformis Gray, Griff. A. K. ix. 108.
Siredon Axolotl Wagler, Icon. Amph. t. 20. 1833; *Tschudi, Batr.* 9.; *Fitz. S. R.* 34.
Proteus seu Larva Salamandræ, Mexicanis Axolotl, Cuv. Humb. Zool. i. 109. t. 12. 14. f. 10. 16.
Axolotl Home, Phil. Trans. 1824, 519. t. 21. 23.; *Cuvier, Oss. Fos.* v. t. 27. f. 24, 25., *R. A.* ii. 119.
Siren pisciformis Shaw, Zool. iii. t. 140. f. 12. 1802.
Gyrinus mexicanus Shaw, Nat. Misc. t. 313. 1800.
Molge giganteus junior Merrem, Tent. 187.
Axolotus mexicanus Cuvier; Bibron, Mus. Zool. Soc. n. 674.
Axolotes guttatus Owen, Ann. and Mag. N. H. xiv. 23.
Hypoethon pisciformis Gravenh. Del. Mus. Urat. 84. 1829.
Siredon mexicanus Baird, l. c. 292. 1849.
 ANAT. *Cuvier in Humboldt's Obs. Zool.* t. 12.; *Home, Phil. Trans.* 1824; *Cuvier, Oss. Fos.* v. 418. t. 27. f. 24. 25.
 OSTEOLOG. *Cuvier in Humboldt, Obs. Zool.* t. 14. f. 10—16. (skeleton).

a—c. In spirits. Mexico. Mr. Brandt's collection.

The skull, t. 3. f. 12., copied from *Cuvier, Oss. Foss.* t. 27. f. 25., differs very little from that of the young *Triton marmoratus*, which had not gained its second pair of legs, figured t. 2. f. 10. from *Dugès*, t. 14. f. 89.

"It (*Siredon*) so much resembles the larva of *Ambystoma punctata*, in both external form and internal structure, that I cannot but believe it to be the larva of some gigantic species of this genus. It differs from all known *Perennibranchiatus* in possessing the larval character of the gular or opercular flap, this being unattached to the subjacent integuments, and free to the extremity of the chin. The nondiscovery of the adult is no argument against

its existence. I had caught hundreds of the very remarkable larva of *Pseudotriton salmonaeus* near Carlisle, before I found an adult. Until then I knew no where to refer the animal, supposing this species to exist no nearer than the mountains of New York and Vermont." — *Baird, Jour. A. N. S. Phil.* 1849, 292.

2. *AXOLOTES MACULATA* Owen, *Ann. and Mag. N. H.* xiv. 23. 1844.

Siredon maculatus Baird, l. c. 292.

"*Axolotes marmoratus*" Owen *MS. Brit. Mus.*

a, b. In spirits. Pale brown, minutely punctated. Partly dissected. Mexico. Presented by R. Owen. Esq.

Doubtful Species of B. Gradientia.

1. *Cylindrosoma albipunctatum* Rüppell, *Verz. Mus. Senk.* 24., not described. N. America.
2. *Xiphosura flavomaculata* Rüppell, *Verz. Mus. Senk.* 24., not described. N. America.
3. *Salamandra agilis* Sager, *Silliman's Jour. Sci.* xxxvi. 1839, 322
4. *S. lurida* Rafin. *Atlant. Jour.* 3. 121. 1832.
5. *S. punctatissima* W. Wood, *Jour. Acad. N. S. Phil.* 1825, 306.
6. *Triton tereticauda* Eschsch. *Zool. Atlas*, iii. 14. Smooth, ferruginous red; belly white, dotted. Tail acuminate, roundish. Length six inches. California.
7. *Salamandre mortuaire* Bosc, *N. Dict. Hist. Nat.* xxi. 60. xxxi. t. 8. f. 6. Toes 4 : 5; inner toes very small. Black, varied with grey; belly pale brown. Tail cylindrical, longer than the body.
8. *Salamandra granulata* Dekay, *Rept. N. Y.* 78. t. 23. f. 66. 1842
9. *Salamandra coccinea* Dekay, *Rept. N. Y.* 81. t. 21. f. 54. 1842
= ? *N. miniata* Rafin.
10. *Sal. ocellatus* Fitz. *N. Class. Rept.* 1825.
11. *Sal. similis* Fitz. *N. Class. Rept.* 1825.
12. *Triturus hypoxanthus* Rafin. *Annals of Nat.* n. 20. 1820.
13. *T. nebulosus* Rafin. *Annals of Nat.* n. 23. 1820.
14. *T. lutescens* Rafin. *Atlantic Jour.* n. 3. 121. 1832.

ORDER II. PSEUDOSAURIA.

Body elongate, lizard-like, with a tail.

Legs four, rudimentary.

Gills rudimentary, internal. Gill apertures permanent throughout life.

Internal nostrils on the sides of the palate, surrounded by the bone of the palate.

Amphiumidæ *Gray, Ann. Phil.* 1825, 216.

Imperfectibranchia *Hogg, Ann. N. H.* 1839.

Ichthyodi hedræoglossi *Wagler, Syst.* 1830.

Amph. abbranchia *Bell in Todd's, Cyclop. Med.* 1835 (not Hogg).

A. urophora (part.) *Hogg, Ann. N. H.* 1839.

B. tetrapoda (part.) *Hogg, Ann. N. H.* 1839.

B. lacertiniformia (part.) *Hogg, l. c.*

Diplopneumena mancabanchia *Hogg, l. c.*

Menopomatidæ *Hogg, Ann. N. H.* 1839.

Monopneumena imperfectibranchia *Hogg, l. c.* 1839.

Monopneumena caducibranchia arcumanentia *Hogg, 1839.*

A. diplopneumena imperfectibranchia *Hogg, Ann. and Mag. N. H.* 1841, 362.

Proteidæ *Tschudi, Batr.* 1838, 26.

Derotremata *Müller, Isis*, 1831, 710., *Ann. and Mag. N. H.* 1841, 355.

Cryptobranchoidæ (part.) *Fitz. Class.* 66.; *Holbrook, N. A. Herp.* 87.

Cryptobranchoidæi *Eichw. Zool. Spec.* ii. 164.

Ichthyodi (part.) *Bonap. Amph. Eur.* ii. 1839.

Ichthyodea *Fitz. S. R.* 34.

Hemisalamandræ et Derotremata *Fitz. S. Rept.* 34.

Salamandra andriadinæ *Bonap. Fauna Ital., Amph. Eur.* 11.

B. U. Trematodera (part.) *Dum. & Bib.*

B. U. Trematodera a. *Baird, Jour. A. N. S. Phil.* 1849, 289.

Abranchia (part.) *Swainson, Cab. Cyclop.* ii. 342.

Synopsis of Families.

- I. *PROTONOPSIDÆ*. Legs strong. Palatine teeth in a transverse arched series.
- II. *AMPHIUMIDÆ*. Legs weak. Palatine teeth in two longitudinal diverging series.

FAM. I. PROTONOPSIDÆ.

Body depressed, fringed on the sides.

Legs four, well developed, fringed on the sides.

Toes 4 : 5.

Head depressed. Bones of skull soldered together.

Jaws with a single series of teeth.

Palate with an arched series of teeth on the front edge of the vomer, near to and parallel with the intermaxillary and maxillary teeth. See t. 3. f. 18.

Amphiumidæ (part.) *Gray, Ann. Phil.* 1825 ; *Bonap. Desc. Anim. Vert.* 26. 1832.

Andriadina et Protonopsidina *Bonap. Fauna Ital.* ii. 131., *Amph. Eur.*

Synopsis of Genera.

1. **SIEBOLDIA.** Tail depressed at the base, compressed at the end. Toes free.
2. **PROTONOPSIS.** Tail compressed. Toes webbed.

1. SIEBOLDIA.

Head large, ovate, trigonate, densely glandular. Muzzle produced. Crown convex. Forehead concave. Nostrils marginal, approximate. Eyes very small, scarcely to be seen. Parotids none. Tongue not distinct ; united to the tegument of the base of the mouth. Palatine teeth numerous. — *Feet* with a crustaceous appendage behind. Toes 4 : 5, small, free, depressed, with a depressed lateral cutaneous lobe. — *Tail* depressed, roundish at the base. — *Body* depressed, with transverse plaits and a thick cutaneous appendage along each side.

Megalobatrachus Tschudi, Batrac. 61. 96. 1838 ; *Fitz. S. R.* 34.

Sieboldia Bonap. Proc. Zool. Soc. 1837, *Fauna Ital.* ii. 131. n. 2.

Cryptobranchus sp. *Van der Hoeven. P. Z. S.* 1838, 25., *Tijdsch.* 1.

Salamandra sp. *Schlegel.*

Hydrosalamandra Leuckart, Froriep. Not. xiii. 19.

1. SIEBOLDIA MAXIMA.

Megalobatrachus Sieboldii Tschudi, Batr. 96. ; *Fitz. S. R.* 33.

Salamandra maxima Schlegel, Fauna Japon. vii. t. 6, 7, 8.

Sieboldia maxima C. Bonap. MS. 1837, *Proc. Zool. Soc.* 1837
Fauna Ital. ii. 131.

Cryptobranchus japonicus Van der Hoeven, *Proc. Z. Soc.* 1838, 25., *Tijdsch.* i. t. 1. f. 56., *Fauna Japon.* t.

Hydrosalamandra japonica Leuchart, *Froriep. Not.* xiii. 19.

a. Skin stuffed. Japan. From Leyden Museum.

b. Skeleton of a. Japan. From Leyden Museum.

2. PROTONOPSIS.

Head large, ovate, trigonate, flat. *Muzzle* produced. *Mouth* large. *Jaws* with a series of minute teeth. *Palatine* teeth small, concentric with the maxillary on front edge of the vomerine bones. *Nostrils* marginal, close together, square. *Tongue* very indistinct.—*Neck* with a single slit on each side.—*Body* depressed, granose.—*Tail* compressed.—*Feet* short, outer edge fringed. *Toes* 4 : 5, short, webbed, clawless; outer toe of the hind foot fringed.—The palatine teeth have been taken for a second series of maxillary. t. 4. f. 18.

Protonopsis (part.) Barton on *Siren lacertina*, 28.

Salamandrops Wagler, *Syst.*; *Fitz. S. R.* 34.

Cryptobranchus sp. Leuck. *Isis*, 1821, 257., *Mém. Soc. Strasb.* iii.; *Fitz. N. Class.* 66. 1826; *Eichw. Zool. Spec.* iii. 164.; Van der Hoeven, *Tijdsch.*

Menopoma Harlan, *Ann. Lyc. N. Y.* i. 270. 1825; *Tschudi, Batr.* 96.; *Cuvier, R. A.* ii. 116.; *Baird, l. c.* 1849, 290.; *Owen, P. Z. S.* 1838, 25.

Abranchus Harlan, *Ann. Lyc. N. Y.* i. 221, 1825; *Gray, Griffith's A. K.* ix. 109.

Eurycea Rafin. *Atlant. Jour.* 1832.

1. PROTONOPSIS HORRIDA. Hellbender.

Pale cinereous, with darker blotches. Head very large, broad.

Protonopsis *horrida* Barton.

Abranchus *horridus* Gray, *Griffith's A. K.* ix. 109.

Salamandra *horrida* Barton.

Salamandra gigantea Barton on *Siren lacertina*, 28.; *Cuvier, R. A.* ii. 101. ed. 2. ii. 118.

Molge gigantea Merrem, *Tent.* 187.

Menopoma gigantea Tschudi, *Batr.* 96.

Salamandrops gigantea Wagler, *Syst.*; *Fitz. S. R.* 34.

Salamandra alleghaniensis Michaux; *Daud. Rept.* viii. 231, 1803; *Latr. Rept.* ii. 253. fig. ; *Cuv. Oss. Foss.* v. 2.

Menopoma alleghaniensis Harlan, *Ann. N. Y. Lyc.* i. 270. 1825, *J. A. N. P.* 320.; *Wied. Voy. Amer. N.* iii. 313.; *Dekay, Rept. N. Y.* 89. t. 18. f. 44.; *Baird, l. c.* 290.

Abranchus alleghaniensis Harlan, *Ann. N. Y. Lyc.* i. 221. 1825; *Leconte, Ann. L. N. York,* i. t. 17.

- Triton alleghaniensis* Daud. *Rept.* viii. 231.
Leverian Water Newt Shaw, *Zool.* 44. 303. 1802.
Proteus of the Lakes (young) Say, *Jour. A. S. Phil.* i.
Cryptobranchus alleghaniensis Van der Hoeven, *Tijdsch.* i. t. f. 4. 7. 1838.
Cryptobranchus salamandroides Leuck. *Isis*, 1821, 257.; *Fitz. N. C.* 66. 1826.
Eurycea mucronata Rafin. *Atlant. Jour.* No. 3. 121. 1832.
Alligator at Pittsburg.
 OSTEOLOG. t. 4. f. 18. *Cuvier, Oss. Fos.* v. 409. t. 26. f. 3, 4, 5, 6. (skull).; *Van der Hoeven*, l. c. t. 1. f. 4.
 a. In spirits. Young, not good state. N. America. From the Leyden Museum.
 b. In spirits. Adult. N. America.

2. PROTONOPSIS FUSCA.

- Head large, flat. Muzzle full and rounded. Body uniform, pale brown, beneath paler.
MNOPOMA fusca Holbrook, *H. Amer. Herp.* v. 99. t. 33.; *Baird*, l. c. 290.
Hab. N. Carolina and Georgia. Probably only a variety of the former.

FAM. II. AMPHIUMIDÆ.

- Head oblong, nearly four-sided. Muzzle truncated. Lips thick, external. Gape small. Jaws with a series of small golden-coloured teeth. Palate with two subcentral, longitudinal, rather diverging series of teeth, nearly parallel to the maxillary teeth. (See t. 4. f. 21., from *Owen, Odont.* t. 62. f. 7.) Tongue indistinct. Internal nostrils surrounded by bone on the sides of the palate.
 Neck with a foramen on each side.
 Body eel-shaped.
 Feet four, short, slender, jointless, of little use for walking.
 Toes rudimentary.
 Ribs very rudimentary.
 Living in water, burrowing in the mud in swamps near streams. Hibernates.
Amphiumidæ (part.) *Gray, Ann. Phil.* 1825; *Bonap. Distrib. Anim. Avert.* 27., *Amph. Eur.*
Amphiuminina *Bonap. Amph. Eur.* 62.
Amphiuma *Cuvier, R. A.* ii. 118.
Abranchia (part.) *Swains. Cab. Cyclop.* i. 342. 1839.

Synopsis of Genera.

1. AMPHIUMA. Toes 2 : 2.
2. MURÆNOPSIS. Toes 3 : 3.

1. AMPHIUMA.

Toes 2 : 2.

Amphiuma Linn. ; *Garden, Correspond. with Linn.* 1821 ; *Cuvier, Oss. Fos.* v. 420., *Mém. Mus. H. N.* xiv. 4. ; *Wagler, Icon.* 6. ; *Tschudi, Batr.* 97. ; *Baird*, l. c. 1849, 290.
Chrysodonta Mitchell, *Med. Recorder*, 1822.
Sirenoides Fitz. *S. R.* 34.

1. AMPHIUMA MEANS. Congo Snake.

Dark brown.

Amphiuma means Linn. ; *Garden in Smith's Correspondence of Linnæus*, 333. 599. 532. ; *Holbrook, N. A. Herp.* t. 30. ; *Harlan, Jour. N. S. Phil.* iii., *Annal. Lyc. N. Y.* 126. t. 22.
Amph. didactylum Cuv. *Mém. Mus.* xiv. 4. t. f. 1, 2, 3. 1828 ; *Wagler, Icon.* t. 19. f. 1., *Bull. Sci. Nat.* 163.
Chrysodonta larvæformis Mitchell, *Medical Recorder*, 1822, No. 19. ; *Harlan, Jour. Acad. N. S. Phil.* iii. 54.
Siren similis Linn. ; *Smith, Corresp.* i. 599.
Sirenoides didactylum Fitz. *S. R.* 34.

ANAT. *Harlan, J. A. N. S.* iii. 55.

a. In spirits. Adult. N. America.

b, c. In spirits. N. America. Presented by T. Bell, Esq.

2. MURÆNOPSIS.

Toes 3 : 3.

Murænopsis Fitz. *S. R.* 34.
Amphiuma sp. *Cuvier, R. A.* ii. 118.
 ?*Siren* (adult) *Rusconi*.

1. MURÆNOPSIS TRIDACTYLA.

Amphiuma tridactyla Cuv. *Mém. Mus.* xiv. t. 1. ; *Holbrook, N. A. Herp.* t. 31. ; *Baird*, l. c. 1849, 290.
Murænopsis tridactyla Fitz. *S. R.* 34.
 ?Four-footed *Siren*, *Siren quadrupeda* Barton on *Siren lacertina*.
Siren lacertina (adult) *Rusconi, Amour. Salam.* p. 11.

OSTEOL. t. 4. f. 21. *Owen, Odont.* t. 62. f. 7.

a. In spirits. Florida, N. America. Presented by R. Harlan, M. D.

ORDER III. PSEUDOPHIDIA.

Body elongate, subcylindrical. Limbs none.

Skin smooth, wrinkled, with minute embedded scales.

Tail extremely short.

Vent open at the extremity of the body.

Gill opening on the side of the neck, closed in the adults.

Bones of skull united into a solid mass.

Internal nostrils on the hinder part of the palate, surrounded by bone.

Jaws with a series of teeth.

Palate with an arched series of teeth in the centre, parallel to the maxillary one, and before the internal nostrils. See *Dugès*,

Batr. t. 14. f. 93. 95. copied t. 4. f. 19.

Amphibia Serpentes (part.) *Linn. S. Nat.* i. 349.

Abranchia *Hogg, Ann. N. H.* 1839. 270.

Batrachii apoda *Oppel. Rept.* 1811; *Merrem, Tent.* 1820.

Cæciliæ hedræoglossæ *Wagler, Syst.* 1830.

Amph. apoda *Gray, Ann. Phil.* 1825; *Bell, Todd's Cyclop. Med.* 1835, 237.

Amph. menopneumena abbranchia *Hogg, l. c.* 18. 1839.

Cécilies *Blainv. N. Ann. Mus.* 1836.

Ophiosomes ou Céciliodes *Duméril, Compte rendu,* 1839, 22.

Gymnophidia seu Cæcilia *Müller, Isis,* 1831, 710.

A. celatibranchia *Hogg, Ann. and Mag. N. H.* 1841, 361.

Les Serpens nus *Cuvier, Règ. Anim.* ii. 86. ed. 2. ii. 98.

Ophidia gymnodermia *Rafin, Annal. Nat.* 78. 1815.

Lacertæ (Cæcilioidei) *Fitz.; Eichw. Zool. Spec.* iii. 177.

Batrachophidii *Bonap. Dist. Anim. Vert.* 24., *Amph. Eur.* 10. 1839.

Pseudophidiens ou Cécilies *Blainv. Bul. Soc. Philom.* 1816. 119.

Cæcilioidea *Fitz. N. Class.* 63. 1826.

Ophiosoma *Dum. & Bib. Erp. Gen.* viii.

Cæciliadæ *Gray, Ann. Phil.* 1825, 217.; *Hogg, Ann. N. Hist.* 1839, 270., 1841, 361.; *Dum. et Bib. Erp. Gen.* viii.

Cæciliæ *Tschudi, Batr.* 1838, 26.; *Fitz. S. R.* 34.

Epicria *Fitz. S. R.* 34.

Peromeles ou Cæcilioides *Dum. & Bib. Erp. Gen.* viii. 97.

Cæciliidæ *Bonap. Amph. Eur.* 51.

Cæciliina *Bonap. Amph. Eur.* 51.

Ophidio-Batraciens *Duvernoy, Rev. Zool.* 1849, 185.

Apoda *Swains. Cab. Encyc.* ii. 343.

FAM. I. CÆCILIIDÆ.

Character and Synonyma of Order.

*Synopsis of Genera.*A. *Muzzle pitted.*

1. CÆCILIA. The pit under each nostril.
2. SIPHONOPS. The pit before each eye. Body with broad rings.
3. ICHTHYOPHIS. The pit before each eye. Body with narrow rings.

B. *Muzzle not pitted.*

4. RHINATREMA.

A. *Muzzle with Pits on each side.*

1. CÆCILIA.

Head cylindrical. *Muzzle* prominent. *Maxillary* and *palatine* teeth short, strong, conical. *Tongue* velvety, with two hemispheres corresponding to the inner holes of the nostrils. *Eyes* seen through the skin, or indistinct. A small pit or false nostril below each nostril.

Cæcilia Tschudi, Batr. 26. 55. 90.; *Fitz. S. R.* 34.; *Dum. et Bib. Erp. Gen.* viii. 274.

Obs. *Cæcilia nasuta Herm.* is a fish (*Sphagebranchus*).

1. CÆCILIA GRACILIS.

Body very long and slender, smooth, except near the cylindrical hinder extremity, where there are 15 close circular plaits. *Tail* rounded, depressed, rounder above. *Muzzle* broad, rounded.

Cæcilia gracilis Shaw, Zool. iii. 597. 1802; *Hempr. Berl. Mag.* 1824, 294.

C. lumbricoidea Daud. Rept. vii. 410. t. 92. f. 2. 1802; *Dum. et Bib. H. G.* viii. 275.

C. lumbricoidea Merrem, Tent. 168.; *Cuv. R. A.* ii. 100.; *Gray in Griff. A. K.* ix. 284.

C. vermiformis Shaw, MS. B. M.

OSTEOL. *Dugès*, *Batr.* t. 14. f. 92—95.

- a. In spirits. Wants head, discoloured. Specimen named by G. Shaw, M.D.

Cæcilia gracilis Shaw.

- b. In spirits. Black.

- c. In spirits. Black, wants head. Demerara. Presented by J. Hadfield, Esq.

- d. In spirits. Bleached. Shorter.

C. vermiformis G. Shaw, MS. Brit. Mus.

- e. In spirits. Without head (var.). Thicker, rings wider apart. S. America.

2. *CÆCILIA TENTACULATA.*

Body cylindrical, rather thick, elongate, with 150 sometimes incomplete rings. Muzzle broad, rounded. Tail rounded.

Cæcilia albiventris Daud. Rept. vii. 422. t. 92. f. 2. 1802; *Cuv. R. A.* ii. 100.; *Gray, Griffith's A. K.* ix. 283.; *Dum. et Bib. H. G.* viii. 277.

C. tentaculata Shaw, Zool. iii. t. 136, 1802.

- a. In spirits. Specimen named by Dr. G. Shaw in Brit. Mus.

Cæcilia tentaculata Shaw.

3. *CÆCILIA COMPRESSICAUDA.*

Body elongate, rather thick. Back smooth, with ring-like folds beneath. Muzzle broad, rounded. End of the body compressed, angular above. Cloaca quite terminal.

Cæcilia compressicauda Dum. & Bib. E. Gen. viii. 278.

Hab. Cayenne.

4. *CÆCILIA ROSTRATA.*

Body short, rather thick, cylindrical, with 25 circular plaits. Muzzle narrow, obtusely pointed. Tail rounded.

Cæcilia rostrata Cuv. R. A. ii. 100.; *Gray, Griff. A. K.* ix. 284.; *Dum. et Bib. Erp. Gen.* viii. 279.

Hab. S. America.

5. *CÆCILIA OXYURA.*

Body short, moderately thick, cylindrical, with 180 plaits, the 30 last only surrounding the body. Muzzle rather narrowed. Tail pointed.

Cæcilia oxyura Dum. & Bib. *E. Gen.* viii. 280.

Hab. Malabar. Museum, Paris.

6. CÆCILIA SQUALOSTOMA.

Body cylindrical, deep olive, with confluent yellow spots, with 140 or 144 rings, the 12 hinder not completely surrounding the body. Muzzle prominent, with a slight protuberance rather below and behind the nostril. Eyes not distinct.

Cæcilia squalostoma Stutchbury, *Linn. Trans.* xvii. 362.

Hab. Africa, Gambia. Mus. Bristol Institution.

2. SIPHONOPS.

Head and *body* cylindrical, with broad rings. Muzzle short. Maxillary and palatine teeth strong, pointed, slightly curved. Tongue broad, entire, with vermiform pits. Eyes seen through the skin. A pit or false nostril on the lip, in the middle between the nostrils and the eye.

ANAT. Duvernoy, Règne Anim. Croch. t. 36., *Rev. Zool.* 1849, 186.

Siphonops Wagler, *Syst.* 198. (1828); *Tschudi, Batr.* 55. 90.; *Fitz. S. R.* 34.; *Dum. et Bib. Erp. Gen.* viii. 282.

Cæcilia sp. *Mikan, Cuvier.*

1. SIPHONOPS INTERRUPTA.

Body with 86 or 90 equally distanced, nearly regular rings. Muzzle broad, rounded. Tail rounded.

Siphonops annulatus Wagler, *Syst.* 198.; *Dum. et Bib. Erp. Gen.* viii. 282.

Cæcilia annulata *Mikan, Delect. Braz.* t. 11.; *Spix, Braz.* t. 26. f. 1.

C. interrupta *Cuv. R. A.* ii. 100.

a. In spirits. Brazils. Presented by Lord Stuart.

b. In spirits. Brazils. From the Leyden Museum.

2. SIPHONOPS MEXICANA.

Rings on the front half of the body regular, equidistant; of the hinder half twice as close as the upper ones, only encircling the dorsal half of the body. Muzzle slightly narrowed. Tail rounded. Back slate-coloured, beneath white; vent with a white ring.

Siphonops mexicanus Dum. & Bib. *Erp. Gen.* viii. 284.

Amphisbæna versatilis Johnston, *MS. B. M.* 1820.

a, b. In spirits. Mexico. Presented by Captain Sir Edw. Belcher, K.C.B., R.N.

c. In spirits. Mexico. Presented by C. Johnston, Esq.
Amphisbæna versatilis Johnston, *MS.*

3. ICHTHYOPHIS.

Head depressed, elongate. *Muzzle* obtuse. *Maxillary* and *palatine* teeth slender, acute, hooked. *Tongue* entire, velvet-like. *Eyes* distinct. A pit (or tentacle) below the eye, near the edge of the upper lip.—*Body* rather fusiform, with numerous crowded circular folds.

Ichthyophis Fitz. *N. Class.* 63.

Epicrium Hasselt, *Isis*, 1827; *Wagler, Syst.* 198.; *Tschudi, Batr.* 55. 90.; *Fitz. S. R.* 34.

Cœcilia sp. *Linn.*; *Van Hasselt, Isis.* 1827, 565.; *Gray, Ann. Phil.* 1825.

1. ICHTHYOPHIS GLUTINOSUS.

Body with 325 ring-like plaits; brown, with a white streak on each side. *Tail* conical.

Ichthyophis Hasselti Fitz. *Verz.* 63.

Epic. Hasselti Wagler, *Isis*, 1828, 743.

Epicrium glutinosum Dum. & Bib. *Erp. Gen.* viii. 286.

Cœcilia glutinosa *Linn. S. N. i.* 393.; *Seba*, ii. t. 25. f. 2.; *Gray*, in *Griff. A. K.* ix. 248.

C. viscosa Latr. *Rept.* iv. 238.

C. hypocyanea Hasselt, *Isis*, 1827, 365.; *Schlegel, Abbild.* t. 39. f. 1. jun.

a. In spirits. Ceylon. Presented by Sir Joseph Banks, Bart. P.R.S.

B. Muzzle not pitted.

4. RHINATREMA

Head depressed, elongate. *Muzzle* blunt, without any pits. *Teeth*, *maxillary* and *palatine*, slender, acute, bent backwards. *Tongue* entire, velvety. *Eyes* distinct.—*Body* rather fusiform, with numerous circular plaits. Black, with a yellow band on each side.

Rhinatrema Dum. & Bib. viii. 288.; *Fitz. S. R.* 34.

Cœcilia sp. *Cuvier, R. A.* ii. 100.

1. RHINATREMA BIVITTATUM.

Rhinatrema bivittatum *Dum. & Bib. H. G.* viii. 288.

Cœcilia bivittata *Cuv. R. A.* ii. 100.; *Guérin, Icon.* t. 25. f. 2.

Gray in Griff. A. K. ix. 284.

Hab. Cayenne. *Mus.* Paris.

B. SIRENES. — *Nostrils not enclosed in a bony case; the internal one in front, between the lips and the bones of the palate. Maxillary bones none, or rudimentary. Palate and lower jaw toothed.*

Cuvier (*Oss. Fos.* v. 240.) observes that the internal nostril is the character which best separates these animals from fish. See also Owen (*Linn. Trans.* xviii. 327.).

ORDER IV. PSEUDOICHTHYAS.

Body elongate, fish-like; covered with imbricated oval scales; and with dorsal and caudal membranes resembling fins, strengthened with soft jointed rays.

Legs four, rudimentary, elongated, subulate.

Gill external, under side tufted; internal, on the edge of some of the septa between the gill openings. *Melville.*

External nostrils not enclosed in a bony case; the internal ones between the lips and the bones of the palate.

Maxillæ none. *Intermaxillæ* very small, with one or two teeth. *Palatine teeth* very large. *Lower jaw* with large teeth. t. 4. f. 20.

Heart with two auricles.

Lungs equal.

Trachea, on ventral face of digestive tube.

Amph. diplopnemena fimbribranchia *Hogg, Ann. and Mag. N. H.* 1841, 362.

Pisces (part.) *Owen, Trans. Linn. Soc.* xviii. 1839, *Ann. and Mag. N. H.* iii. 265., *Ann. Sci. Nat.* x. 371.; *Bonap. Pisces Europ.*

Amphibia (part.) *Bichoff, Mem. Leipzig*, 4to, 1840, and in *Ann. Sci. Nat.* 1840; *Jones, Outlines of Animal King.* 538.; *M. Edwards, Ann. Sci. Nat.* 1840, 159., and in *Ann. and Mag. N. H.*

1841, 468.; *Schlegel, Faun. Japon.* 121.

Ichthyo-Batraciens *Duvernoy, Rev. Zool.* 1849, 188.

FAM. I. LEPIDOSIRENIDÆ.

Synopsis of Genera.

1. LEPIDOSIREN. Ribs fifty-five pair.
2. PROTOPTERUS. Ribs thirty-six pair.

1. LEPIDOSIREN.

Ribs 55 : 55.—*Body* elongate.—*Limbs* anterior, simple.

Lepidosiren Fitzinger; Wiegmann, *Arch.* 1837, 232.; Natterer, *Annal. Wiener Mus.* 1837, ii. 165.; Owen, *Linn. Trans.* xviii. 327.; Bischoff, *Mém. Anat.* 1840, *Ann. Sci. Nat.* 1840, 159. *Ann. N. Hist.* vi. 466., vii. 362.; Fitz. *S. R.* 34.; Schlegel, *Faun. Japon.* 121.

Amphibichthys Hogg, *Ann. and Mag. N. H.* 1841, 362.]

1. LEPIDOSIREN PARADOXA. Caramuru.

Lepidosiren paradoxa Fitz. *Ann. Wiener Mus.* 1837, ii. 165. t. Bischoff, *Mém. Anat.*, *Ann. Sci. Nat.* 1840.

OSTEOL. *Ann. Sci. Nat.* 1840, t. .

Hab. Brazil. *Mus. Vienna.*

2. PROTOPTERUS.

Ribs 36 : 36.—*Body* short, tapering.—*Limbs* anterior, simple.

Lepidosiren sp. Owen, *Linn. Trans.* xviii. 327., *Odont.* t. 59. t.; Milne-Edwards, *Ann. Sci. Nat.* 1840, 371., *Ann. and Mag. N. H.* 1841, 466. 497.; Hogg, *Ann. and Mag. N. H.* vii. 1841; Jones, *Outlines of Anim. K.* 538.; Jardine, *Ann. and Mag. N. H.* 1841, vii. 21.; Melville, *Rept. Brit. Assoc.* 1847; Müller, *Ann. and Mag. N. H.* 1845, 348.

Protopterus Owen, *Cat. Col. Surg. MS.*, *Linn. Trans.* xviii. 332.

Protomelus Hogg, *Ann. and Mag. N. H.* vii. 359. note, 1841.

Rhinocryptis Peters; Müller, *Obers. Berl. Acad.* 1844, and *Ann. and N. H.* 1845, 348.

1. PROTOPTERUS ANNECTENS.

Lepidosiren annectens Owen, *Linn. Trans.* xviii. 322.; Jardine, *Ann. and Mag. N. H.* 1841, vii. 21. fig. p. 24, 25.; Melville, *Rept. Brit. Assoc.* 1847.

OSTEOL. t. 4. f. 20. *Owen, Linn. Trans., Odont. t. 59.*

a—d. In spirits. Gambia. Presented by the Earl of Derby

e—f. In spirits. Gambia. Presented by J. Gates, Esq.

2. PROTOPTERUS RHINOCRYPTIS.

Rhinocryptis amphibia *Müller, Obers. Berl. Acad. 1844, Arch. Phys. 1845. t. ; Ann. and Mag. N. H. 1845, 348.*

ANAT. *Müller, l. c.*

Hab. Quillemane. *Dr. Peters, Mus. Berlin.* "The same as the preceding." *Dr. Melville.*

ORDER V. MEANTIA.

Body elongate, naked, smooth.

Legs two or four, rudimentary, weak, with short weak toes.

Gills external, well developed, permanently developed during the whole life of the animal.

Nostrils not enclosed in a bony case; the inner ones opening between the lips and the palatine bones.

Eyes small, without eyelids.

Maxillæ rudimentary or wanting; intermaxillæ toothed.

Palate and *lower jaw* toothed. *See t. 4. f. 16. 17.*

Sebæ, seu Reptilia caudata (part.) *Scopoli, Introd. H. N. 463. 1777.*

Meantia *Rafin. Annal. Nat. 78. 1815.*

Amphibia amphipneusta (part.) *Gray, Ann. Phil. 1825, 215.; Bell, Todd's Cyclop. Med. 1835.*

Sirenes *Linn.; Gray, Ann. Phil. 1825, 215.*

Sirenidæ *Gray, Ann. Phil. 1825, 215.; Bonap. Distr. A. Vert. 27., Amph. Eur.*

B. Grad. amphipneusta *Merrem, Tent. 1820.*

Amph. perennibranchia Ichthyoida *Latr. Fam. Nat. 1825.*

Ord. Manentibranchia *Hogg, Ann. N. H. 1839.*

Ichthyodi hedræoglossi (s. 2.) *Wagler, Syst. 1830.*

Reptilia malacoderma amphibia *Kirby, Bridgw. Treat. ii. 415.*

A. dipoda et tetrapoda (part.) *Hogg, l. c.*

A. anguiformia et pisciformia (part.) *Hogg, l. c.*

Diplopneumena externibranchia *Hogg, l. c. 18. 1839.*

Proteidea *Müller, Isis, 1831, 710.*

Peromeles (part.) *Dum. & Bib. Erp. Gen.*

- A. manentibranchia* Hogg, *Ann. and Mag. N. H.* 1841, 362.
Proteidæ Tschudi, *Batr.* 1828, 26.
Phanerobranchidæ Fitz.; Holbrook, *N. A. Herp.* 101.
Ichthyoidei Eichw. *Zool. Spec.* iii. 163.
Ichthyodi (part.) Bonap. *Amph. Eur.* 11. 1839.
Amphibiens ou *Proteus* ou *Sirens* Blainv. *Bull. Soc. Philom.* 1816, 119.
Subichthiens Blainv. *Org. Anim.* t. 5. 1822.
Ichthyodea branchiata Fitz. *Syst. R.* 35.
Perennibranchia, or *Phanerobranchia* Bonap. *Distr. An. Vert.* 1832.
*Exobranche*s ou *Proteoides* Dum. & Bibr. *Erp. Gen.* viii. 94.
B. U. trematodera β. Baird, *J. A. N. Phil.* 1849, 290.
A. Amphipneura Swains. *Cab. Cyc.* ii. 339. 1839.

Synopsis of Families.

- I. *PROTEIDÆ*. Legs four, weak. Tail compressed. Palate with a single series of teeth on the front edge of the vomerine bone.
 II. *SIRENIDÆ*. Legs two, anterior. Body subcylindrical. Palatine teeth in numerous cross series on the vomerine bone.

FAM. I. *PROTEIDÆ*.

- Limbs* four, weak.
Tail compressed.
Gill-flaps distinct.
Palatine teeth in two long series on the front edge of the vomerine bones. t. 4. f. 16.
Proteina Gray, *Ann. Phil.* 1825, 215.
Ichthyoida (part.) Latr. *Fam. Nat.* 1825.
Proteidæ Hogg, *Ann. N. Hist.* 1839.
Hypochthonina Bonap. *Amph. Eur.*

Synopsis of Genera.

1. *PROTEUS*. Head long, truncated in front. Toes 3 : 4. Tail short, compressed. Maxillary bone incomplete, toothless.
2. *NECTURUS*. Head broad, depressed. Toes 4 : 4. Tail compressed. Maxillary bone complete, toothed.

1. PROTEUS.

Head oblong, truncated. *Eyes* very small. *Maxillary teeth* none. *Palatine teeth* in two long series. t. 4. f. 16. *Tongue* not to be distinguished. — *Gills* large, 3 : 3. on each side, fringed. — *Feet* four. — *Toes* 3 : 4. — *Tail* short, compressed. — *Body* elongate, cylindrical. — *Skin* smooth.

Proteus (sp.) *Laur. Rept.* 37. 1788; *Schneider, Amph.* i. 31.

Proteus *Schreiber, Phil. Trans.* 1801; *Latr. Rept.* iv. 310.; *Daud. Rept.* viii. 263.; *Michah, Isis*, 1830, 190.; *Cuvier, R. An.* ii. 102., *Oss. Fos.* v. 427. (not Müller.)

Larvius Rafin. Annal. Nat. 78. 1815.

Platyrrhynchus Leuckart, Equo Bisulco, 4. 1816.

Hypochthon Merrem, Tent. 188. 1820; *Gray, Ann. Phil.* 1825, 215.; *Tschudi, Batrac.* 97.; *Fitz. S. R.* 35.

1. PROTEUS ANGUINUS.

Pale bluish, becoming darker when exposed.

Proteus anguinus Laur. Rept. 37. t. 4. f. 3.; *Schreib. Amph.* i. 45. *Phil. Trans.* 1801; *Configliachi et Rusconi, Prot. Ang.*; *Latr. Rept.* ii. 306.; *Daud. Rept.* viii. 266.; *Cuvier in Humb. Obs. Zool.* i. 119. t. 13. f. 5. — 10. 102.

Siren anguinus Shaw, Zool. iii. 608.

Hypochthon Laurentii Merrem, Tent. 188.; *Fitz. N. Class.* 66., *S. R.* 35.; *Gray, Ann. Phil.* 1825, 215.

H. anguinus Bonap. Amph. Eur. 94.; *Tschudi, Batr.* 97.

P. Laurentii, P. Freyeri, R. Schreibersii, R. Zoysii, P. Carraræ, and *P. xanthostictus Fitzinger, Mus. Vienna.*

OSTEOL. t. 4. f. 16. *Cuvier, Humboldt, Obs. Zool.* i. 413. (skeleton.), *Oss. Fos.* v. 427. t. 27. f. 14, 15.

a. In spirits. Adult. Carniola.

S. anguinus Shaw, B. M.

b—d. In spirits. Nearly adult. Carniola

e, f. In spirits. Young. Carniola. Presented by M. Drummond, Esq.

g. In spirits. Nearly adult. Carniola. Presented by B. Tyndall, Esq.

h. In spirits. Young. Carniola? Presented by Miss Bell.

i. In spirits. Half-grown. Carniola?

k. In spirits. Adult. Krain, Magdalenengrotte.

P. anguinus Schreber.

l. In spirits. Adult. Krain. From the Vienna Museum, P. Laurentii Fitzinger.

m. In spirits. Adult. Krain. From the Vienna Museum, P. Freyeri Fitzinger.

- n, o. In spirits. Adult. Krain and Adelsburg. From the Vienna Museum.
P. Schreibersii Fitzinger.
 p. In spirits. Adult. Krain. From the Vienna Museum.
P. Zoisii Fitzinger.
 q. In spirits. Adult. Presented by Professor Carrara.
P. Carraræ Fitzinger.

2. NECTURUS.

Head large, broad, depressed. *Mouth* large. *Lip* thick, fleshy. *Eyes* small. *Jaws* with a single series of conical pointed teeth. *Palate* with a long arched series of teeth on the front of the vomerine bones, concentric with the maxillary teeth. *Pterygoid* teeth few. *Tongue* broad, full in front, free and movable at the tip and front of the sides. *Spiracles* two on each side.—*Gill* large, three-lobed, each concealing the spiracles.—*Feet* four. *Toes* 4 : 4, clawless.—*Body* nearly smooth.—*Tail* compressed.

Protonopsis (part.) *Barton on Siren Lacertina.*

Proteus sp. *Barnes; Mitchell, Silliman's Jour.* iv.; *Lacép. Ann. Mus.* x. 230.; *Mayer, Anal.* 82.

Necturus Rafin. Jour. Phys. lxxxviii. 417. 1819; *Annal. Nat.* 1820; *Wagler, Syst.* 210.; *Fitz. S. R.* 35.

Menobranthus Harlan, Annal. N. Y. Lyc. i. 221. 1825, *Journ. Acad. N. S. Philad.* iv. t. 21.; *Gray, Ann. Phil.* 1825, 216.; *Tschudi, Batr.* 97.; *Cuvier, R. A.* ii. 119.

Salamandra sp. *Schneid. Amph.* i. 50.

Triton (larva?) *Say, James's Travels,* i. 5. 203. 1823; *Jour. Acad. N. S. Philad.* 111.

Exobranhia Rafin. Annal. Nat. 78. 1815.

Phanerobranthus Fitz. N. Class. 43. 68. 1826.

Sirena sp. *Rafin. Amer. Month. Mag.* iv. 41. 1818.

1. NECTURUS MACULOSUS.

Dusky cinereous grey, with irregular subcircular darker spots; a dark streak from nose over the eyes.

Salamandra sp. ? e lacu Champlain *Schneider, Amph.* i. 50. 1799.

Proteus tetradactylus Lacép. Ann. Mus. x. 230. t. 17. 1807.

Menobranthus Lacepedii Gray in Griff. A. K. ix. 108.

Phanerobranthus Lacepedii Fitz. N. Class. 66. (1826.)

Menobranthus tetradactylus Harlan, Jour. Acad. N. S. Phil. v. 324.; *Gray, Ann. Phil.* 1825. 216.]

Sirena maculosa Rafin. Am. Monthly Mag. iv. 41. 1818.

- Necturus maculatus Rafin.*; *Blainv. Jour. Phys.* lxxviii. 417. 1819;
Baird, l. c. 1849, 291.
Necturus maculosus Rafin. Annals of Nat. 1820.
N. luteus Rafin. Annals of Nat. 1820.
N. phosphoreus Rafin. Annals of Nat. 1820.
N. lateralis Wagler, Syst. 210.; *Fitz. S. R.* 35.
Nenobanchus Sayii Gray, Ann. Phil. 1825, 216.
roteus of the Lakes *Mitchell, Amer. Jour. Arts and Sciences*, iv.
 181. vii. 63.
Nenobanchus maculatus Holbrook, N. Amer. Herp. viii. t. 29.
 1842.
roteus maculatus Barnes, Amer. Jour. Arts and Sci. xi. 268. 1827,
 xiii. 68.
Nen. lateralis Harlan, Ann. N. Y. Lyc. i. 221. 1825, *Med. and*
Phys. Res. 89.; *Newwied, Trav. N. Amer.* iii. 245.
alamandra alleghaniensis jun. Daud. Rept. viii. 231.; *Say, Jour.*
Acad. N. S. Phil. iv. t. 21.
rotonopsis horrida (part.) *Barton on Siren.*
Niton lateralis Say, James's Exped. Rocky Mountains, i. 5. 302.
 1823.
 a. In spirits. Half-grown. N. America, Ohio. From the
 Leyden Museum.
 b. In spirits. Not good state. N. America.
 c. In spirits. Adult. N. America. Presented by John Edw.
 Gray, Esq.

2. NECTURUS LATERALIS.

- Head large, flattened above. Muzzle truncated. Body elongate,
 dusky brown, with a dark streak from nostril through the eye,
 and along each side to the tail.
Niton lateralis Say, Long's Exped. Rocky Mount. i. 300., 5. 103.
Nenobanchus lateralis Harlan, Med. and Phys. Res. 89.; *Hol-*
brook, N. A. Herp. v. 115. t. 28.
lab. Mississippi.

3. NECTURUS n. s. *Gibbes*, fide *Baird, J. A. N. Phil.* 1849, not
 described.

- lab.* Santee River, S. Carolina.

FAM. II. SIRENIDÆ.

- Limbs* two, anterior, small.
Body subcylindrical, rather compressed behind.

Operculum none.

Teeth in each jaw.

Palate with numerous cross series of teeth on the vomerine bones.
t. 4. f. 17.

Living in moist clay, rarely in water, but can swim well.

Sirenina Gray, *Ann. Phil.* 1825, 216.

Sirenidae Bonap. *Amph. Eur.* 32.; *Hogg, Ann. N. H.* 1839.

Ichthyoida (part.) *Latr. Fam. Nat.* 1828.

Sirenes (part.) *Fitz. S. R.* 35.

Proteideae (part.) *Tschudi, Batr.* 96.

Meantes Linn. *S. N.* i. addend.

Synopsis of Genera.

1. SIREN. Fingers four. Gills ciliated.
2. PSEUDOBANCHUS. Fingers three. Gills not ciliated.

1. SIREN.

Head oblong, subquadrate, short. Mouth small. Eyes very small. Maxillary and intermaxillary teeth none. Palatine teeth numerous on the front of outer side, in many oblique cross series on the vomerine bone (t. 4. f. 17.). Tongue small, arrow-shaped, rather rounded in front, only free at the tips and front of sides. — *Gills* three on each side, small; spiracles three on each side under the gills. — *Feet* two, anterior, small. — *Fingers* four. — *Body* cylindrical, elongate. — *Skin* smooth.

Siren Linn. *S. N.* i. add., *Amæn. Acad.* vii. 311. 1766; *Schneid. Amph.* i. 48.; *Scopoli. Int. H. N.* 463. 1777; *Latr. Rept.* ii. 159.; *Daud. Rept.* viii. 269. 438.; *Cuvier, R. A.* ii. 102.; *Merrem, Tent.* 189.; *Gray, Ann. Phil.* 1825, 46.; *Tschudi, Batr.* 69—98.; *Fitz. S. R.* 35.; *Holbrook, N. A. Herp.*; *Baird*, l. c. 1849, 291.

Sirena Rafin. *Annal. Nat.* 78. 1818.

Muraena sp. *Gmelin, S. N.* i. 1136.

Larvæ lacertæ Pallas? *Nov Comm. Petrop.* xix. 438. 1775; *Linn. S. N.* i. 371. note.

1. SIREN LACERTINA. Siren, or Mud Eel.

Black, with numerous white specks; beneath purplish.

Mud Iguana *Ellis, Phil. Trans.* lvi. 189. t.

Muraena Siren *Gmelin, S. Nat.* i. 1136.

Siren lacertina Linn. *Amæn. Acad.* vii. 311. 1766; *Syst. Nat.* add.

2. t. 99. f. 2.; *Shaw, Zool.* iii. 601.; *Baird*, l. c. 291.

Siren Penn. Arct. Zool. 325.

Sirene Camper, Schrift. Berlin. N. F. vii. 482.; Cuvier in Humb. Obs. Zool. i. 28. t. 11. 14. f. 1. 9., R. A. ii. 120.; Shaw, Zool. iii. 601.; Schneider, Amph. i. 48.; Daud. Rept. viii. 272.; Merrem, Tent. 188.; Harlan, Med. and Phys. Res. 88.; Fitz. S. R. 35.; Holbrook, N. A. Herp. t. 34.

OSTEOLE. 4. f. 17. Cuv. Humb. Obs. Zool. i. 98.; ii. t. 14. f. 9. Oss. Fos. v. t. 27. f. 1—6.

a. In spirits. N. America. Presented by Dr. Garden.

2. SIREN INTERMEDIA.

Dusky bluish black. Gills three-lobed, reticulated and fringed below.

Siren intermedia Leconte, Ann. Lyc. N. Y. 53. 1828; Harlan, Med. and Phys. Res. 89.; Wagler, Syst. 318.; Holbrook, N. A. Herp. v. 107. t. 35.; Cuvier, R. A. ii. 121.

Siren lacertina (half-grown) Schlegel, Faun. Japon.

a. In spirits. Texas. Mr. Ward's Collection.

2. PSEUDOBANCHUS.

Head suboval, flattened. Muzzle rather pointed. Eyes rather large. — *Fingers* three. — *Gill* three-lobed, fimbriated on the edges, the front lobe very small. *Spiracle* one on each side.

Pseudobranchus Gray, Ann. Phil. 1825, 216.; Fitz. N. Class. 43. 1826, S. R. 35.

Parvibranchus Hogg, Ann. N. H. 1839, 6. note.

Siren sp. Leconte, Ann. N. Y. Lyc. i. 52. 1824; Tschudi Batr. 98.

Sirenoide Schlegel, Faun. Japon. 121.

1. PSEUDOBANCHUS STRIATUS.

Body dusky, with a broad brown stripe on each side, and another rather paler on each side of the belly.

Siren sp. Mitchell in Cuv. Oss. Fos. v. 419. (1822.)

Siren striata Leconte, Ann. Lyc. N. York, i. 54. t. 4. 1824, ii. 133.; Harlan, Med. and Phys. Res. 88.; Wagler, N. S. 310.; Tschudi, Batr. 98.; Cuvier, R. A. ii. 121.; Baird, l. c. 291.

Pseudobranchus striatus Gray, Ann. Phil. 1825.; Fitz. S. R. 35.

Siren lacertina jun. Schlegel, Faun. Japon. 121.

Hab. N. America. Mus. Le Conte.

INDEX.

- A.
 abdominalis, Sal. 27.
 Abranchia, 51. 56.; Amph. 51.
 Abranchus, 53.
 Acholotes, 50.
 agilis, Sal. 48.
 albiguttatum, Cylin. 48.
 albiventris, Cœc. 58.
 alleghaniensis, Ab. 53.; Cryptol. 53.; Men. 53.; Sal. 53. 67.
 Alligator, 54.
 alpestris apuanus, Triton, 22.; Molge, 21.; Sal. 21.; Triton, 21.
 Ambystomina, 32.
 Ambystoma, 32. 34. 35.
 americana, Lac. 19.
 americanus, Triton, 19.
 amphibia, Rhin. 63.
 amphibichthys, 62.
 Amphibæna, 60.
 Amphibiens, 9.
 Amphipneura, Amph. 64.
 amphineusta, Amph. Grad. 63.
 amphineusta, Amph. 63.
 Amphiuma, 54. 55.
 Amphiumida, 51. 54.
 Amphiuminina, 54.
 Andriadina, 52.
 andriadina, Sal. 51.
 anguliformis, Amph. 63.
 anguinus, Prot. 65.
 annectens, Lep. 62.
 annulatus, Siph. 59.
 Apoda, 56.
 apoda, Batrachii, 56.
 aquatica, Lac. 19. 27.; Sal. 20. 21.
 aquaticus, Lac. 20.
 arcumanentia, Mon. cad. 51.
 Argus, Sal. 35.
 articulatus, Desm. 41.
 Atolocatli, 49.
 atra, Sal. 47.; Lac. 16.
 atretodera, Batrac. Urod. 13.
 Atretodères, 14.
 attenuata, Batr. 42.; Sal. 42.
 attenuatus, Batrach. 42.
 auriculata, Sal. 41.
 auriculatus, Desm. 41.; Pleth. 41.
 Axolotl, 49.; Sired. 49.
 Axolotus, 50.
- B.
 Batrachia, 9. 10. 11.
 Batrachophidi, 56.
 Batrachopsis, 43.
 Batrachoseps, 32. 42.
 Batraciens, 9. 11.
 Beecheyi, Sal. 25.
 Bellii, Spel. 46.
- Bibronii, Triton, 20.
 bilineata, Mycetog. 45.; Sal. 44.; Spel. 44. 45.
 bivittata, Cœc. 61.
 bivittatum, Rhi. 61.
 Bradybates, 15. 26.
- C.
 Caducibranches, Amph. 11.
 caducibranchia arcuadentia, A. M. 13.
 Cœcilia, 56. 57.
 Cœciliadæ, 56. 57.
 Cœciliina, 56.
 Cœcilioidea, 56.
 Cœcilioides, Lacerte, 56.
 Californæ, Pleur. 25.
 carnifex, Sal. 20.; Trit. 20.
 Carolinæ, Lac. 35.; Amb. 35.
 Carrare, Prot. 65.
 caudata, Batrac. 13.; Repetilia, 63.
 Cœcilies, 56.
 Cœcilioides, 56.
 ceinturée, Sal. 21.
 celatibranchia, Amph. 56.
 Chrysodonta, 55.
 cincta, Sal. 21. 28.
 cinerea, Molge, 27.; Sal. 38.
 cinereus, Pleth. 38.
 cirrigera, Sal. 44.; Spel. 44.
 coccinea, Sal. 49.
 condylura, Seir. 30.
 compressicauda, Cœc. 58.
 Corsica, Sal. 17.
 cristata, Sal. 19.
 cristatus, Triton, 19.
 Cryptobranchioidea, 51.
 Cryptobranchoides, 51.
 Cryptobranchus, 52.
 Cryptopleura, 14. 15.
 cylindracea, Sal. 39.
 cylindrica, Sal. 39.
 Cylindrosoma, 43. 48.
 Cynops, 15. 24.
- D.
 Dactylonyx, 33.
 didactylum, Amph. 55.; Si-renoides, 55.
 Diemictylus, 22.
 Derotremata, 51.
 Desmognathus, 32. 40.
 Diplonca, 9.
 Diplonpneumena, 51.; Amph. 51.
 Dipnoa, 9.
 dipoda, Amph. 63.; Batrac. 13.
 dorsalis, Not. 23.; Trit. 23.
- E.
 elegans, Sal. 21. 27. 28.
 Elophe (part.), 14.
- ensatus, Triton, 49.
 Epieria, 56.
 Epicrium, 60.
 episcopus, Amb. 37.
 Ermanni, Triton, 22. 25.
 erythronota, Pleth. 38.; 38.; Saurophis, 38.
 Erythronotum, Amb. 37.
 Eschscholtzii, 48.
 Euproctus, 15. 23.
 Eurycea, 53.
 Ensatiua, 32. 48.
 exigua, Sal. 27.; Triton, 27.
 exiguus, Triton, 27.
 Exobranches, 64.
 Exobranchia, 66.
 externibranchia, Dip. 63.
- F.
 fasciata, Sal. 36.
 fenestrata, Sal. 19.
 fimbribranchia, Amph. d. 61.
 flavissima, Sal. 44.
 flavomaculata, Xiph. 48.
 Freyeri, Prot. 65.
 frontale, Amb. 38.
 frontalis, Sal. 38.
 funebris, Sal. 47.
 fusca, Geot. 47.; Sal. 47.; Menop. 54.; Prot. 54.
 fuscus, Desm. 40.; Geot. 47.; Trit. 41.
- G.
 Genet, Sal. 47.
 Genet, Geot. 47.
 Geotriton, 32. 47.
 Gesneri, Triton, 21.
 gigantea, Molge, 53.; Sal. 53.; Salamandrops, 53.
 giganteus junior, Molge, 53.
 Glossoliga, 18.
 glutinosa, Cœc. 60.; Sal. 39.
 glutinosum, Epic. 60.
 Pleth. 39.
 glutinosus, Ich. 60.; Pleth. 39.
 gracilis, Cœc. 57.
 Gradientia, 11.
 gradientia mutabilia, Batr. 13.
 granulata, Sal. 39. 49.
 granulatam, Pleth. 39.
 granulosus, Triton, 25.
 Gravenhorstii, Sal. 36.
 Greenii, Sal. 23.
 guttatus, Ach. 50.
 guttolineata, Sal. 45.; Spel. 45.
 gymnodermia, Ophidiu, 56.
 Gymnophidia, 56.
 gyrioides, Lac. 21.
 Gyrius, 49.

- H.
 i, Amb. 38.; Sal.
 Ich. 60.
 sage, Cocillia, 66.
 oasi, Ichthy. 63.
 achia, 11. 14.
 yllium, 32. 41.
 mandra, 51.
 ton, 32, 33.
 Prot. 53. 67.; Sal.
 Ab. 53.
 II, 14.
 unandra, 52.
 , 30.
 n, 50. 65.
 ionina, 64.
 ea, Cocc. 60.
 bus, Tritur. 50.
 I. J.
 batraciens, 61.
 a, 51.
 , 10. 51. 64.
 a, 64. 68.
 a, Amph. per. 63.
 ia, 57. 60.
 urus, 18.
 lge, 21.; Sal. 21.
 ibranchia, 51.
 ibranchia, Monop.
 let. 33.; Sal. 33.;
 33.
 a, Siren, 69.
 a, Sal. 40, 41.
 a, Siph. 59.
 Hyd. 52.; Lac. 33.
 ; Cryptod. 52.;
 33.
 lana, Amb. 34.;
 ; Xiph. 34.
 L.
 i, Menob. 66.; Pha-
 66.
 , Siren, 55. 68. 69.
 , 10.
 ormia, Batrach. 51.
 Lac. 19. 21.
 i.
 olge, 49.; Sal. 49.;
 , 49.
 nis, Chry. 55.
 s, 65.
 , Sal. 19.
 Menob. 67.; Nect.
 rition, 67.
 i, Prot. 65.
 ren, 62.
 renidæ, 62.
 on, 26.
 Triton, 27.
 da, Cylind. 43.;
 . 43.; Salam. 43.;
 3.
 s, 14. 15. 26.
 Spel. 43.
 lugubris, Sal. 26.; Tar. 26.
 lumbricoides, Cocc. 57.
 lurida, Sal. 49.
 lutescens, Tritur. 49.
 luteus, Nect. 67.
 M.
 macrodactyla, Amb. 37.
 macrodactylum, Amb. 37.
 maculata, Axol. 50.; Lac.
 37. 35.; Sal. 16. 45.;
 Pseudot. 45.
 maculatus, Nect. 67.; Prot.
 67.; Sired. 50.
 maculosa, Sal. 16.; Sir. 66.
 maculosus, Nect. 66, 67.
 major, Sal. 19.
 malacoderma amphibia,
 Rep. 63.
 mancabranchia, Dipl. 51.
 Manentibranchia, 63.; Amp.
 64.
 marmorata, Sal. 21.
 marmoratus, Axol. 50.; Tri-
 ton, 20, 21.
 mavortia, Amb. 37.
 mavortium, Amb. 37.
 maxima, Sal. 52.; Steb. 52.
 means, Amphiuma, 58.
 Meantes, 68.
 Meantia, 10. 63.
 Megalobatrachus, 52.
 Megapterna, 24.
 Melnus, 14.
 melanosticta, Sal. 42.
 Menobranchus, 64. 66.
 Menopoma, 53.
 Menopomatidæ, 51.
 mexicanus, Axol. 50.; Gyn.
 49.; Siph. 59.; Sired. 50.
 millepunctata, Sal. 23.; Tri-
 ton, 23.
 minlatus, Not. 22, 23.; Tri-
 tur. 23.
 Molge, 18. 20. 31.
 Molgidæ, 14, 30.
 Monopneumena, 51.
 montana, Meg. 24.; Spel. 46.
 montanus, Pseudot. 46.
 mortuaire, Sal. 50.
 mucronata, Euryc. 54.
 Muræna, 68.
 Murænopis, 54, 55.
 N.
 nævia, Sal. 31.
 Nasuta, Cocc. 57.
 nebulosus, Hyn. 20.; Sal.
 30.; Trit. 19.; Tritur. 49.
 Necturus, 66.
 neocæsareanus, Proteus, 45.
 Newt, Common, 27.
 niger, Desm. 40.; Trit. 34.
 nigra, Pseudot. 40.; Sal. 16.
 40.; Triton, 40.
 Notophthalmus, 15. 22.
 Nudipellifera, 9.
 nychthemerus, Triton, 22.
 O.
 ocellata, Molge, 23.
 ocellatus, Sal. 49.
 (Edipus, 32. 47.
 Olacurus, 18.
 Ommatriton, 15. 29.
 Onychodactylus, 31, 32.
 Onycopus, 33.
 opaca, Amb. 36.; Sal. 26.;
 opacum, Amb. 36.
 operculata, Siren, 45.
 Ophidia, part. 9.
 Ophidia, Batraciens, 56.
 Ophiosoma, 56.
 Ophiosomes, 56.
 oxyura, Cocc. 58.
 P.
 palmata, Molge, 27.; Sal.
 27, 29.
 palmatus, Lissot. 27.; Sal.
 28.; Loph. 28.
 Palmetes, 14.
 palmipes, Lissot. 28. 29.;
 Sal. 27.
 palustris, Lac. 19. 20.;
 Molge, 20.; Sal. 19. 27.;
 Triton, 27. 28.
 paradoxa, Lep. 62.
 parisinus, Triton, 27.
 Parvibranchus, 69.
 Pelonectes, 24.
 Perennibranchia, 64.
 Peroncles, 56. 63.
 perspicillata, Sal. 20.; Seir.
 29, 30.
 Phaneropleura, 15.
 Phanerobranchia, 64.
 Phanerobranchus, 66.
 Phaneroglossæ, Ranæ, p. 13.
 Phatnomatorrhina, 39.
 phosphoreus, Nect. 67.
 Phyllhydrus, 49.
 picta, Sal. 40, 41.
 pisciformia, Amph. 63.
 pisciformis, Hyp. 50.; Si-
 ren, 49.
 platiceuda, Sal. 20.
 platycephala, Molge, 24.
 platycephalus, Eup. 24.;
 Pet. 24.
 platydactyla, Sal. 49.
 platydactylus, (Edip. 48,
 Platyrrhynchus, 65.
 platyura, Sal. 19.
 Plethodon, 32. 35.
 Plethodontidæ, 14. 31.
 Plethodontina, 38.
 Pleurodeles, 15. 17. 25.
 Pleurodelina, 15.
 Poirati, Glossol. 19.; Triton,
 18. 19.
 porosa, Lac. 19.
 porphyritica, Sal. 46.; Spel.
 46.
 porphyriticus, Triton, 29. 46.
 prolalibranchia, part. 13.
 Proteidæ, 64.
 Proteidæ, 51. 63. 68.

- Proteina, 64.
 Proteus, 18. 49. 64. 65.
 Protomelus, 62.
 Protomopsidae, 51.
 Protomopsidina, 52.
 Protomopsis, 52, 53. 66.
 Prototerpis, 62.
 pruniata, Sal. 20.
 Pseudobranchius, 68. 69.
 Pseudochthys, 10. 61.
 Pseudophidia, 10. 56.
 Pseudophidiens, 56.
 Pseudo-Salamandra, 31.
 Pseudosauria, 10. 50.
 Pseudosauriens, 13.
 Pseudotriton, 35. 43.
 punctata, Amb. 35.; Lac. 35.; Molge, 27.; Sal. 27. 28.
 punctatissima, Sal. 49.
 punctulatum, Amb. 37.
 punctatus, Lissot. 27.; Loph. 27.; Triton, 27.
 pyrrhogastra, Cynops, 25.
- Q.
- quadramaculata, Sal. 40. 41.
 quadridigitata, Batrach. 42.
 quadridigitatus, Batrach. 42.
 quadrupeda, Siren, 55.
 Quadrupedes ovipari caudati, 13.
- R.
- Reptiles Ictyoides, 9.
 Rhinatremia, 57. 60.
 Rhinocryptis, 62.
 rhinocryptis, Prot. 63.
 rostrata, Cœc. 58.
 ruber, Mycetog. 45.
 rubriventris, Sal. 26. 45.
 rubra, Molge, 45.; Sal. 45.; Spel. 45.
 Rusconi, Eup. 24.; Triton, 24.
- S.
- Salamandra, 13. 15. 16.; Lac. 16. 27. 35. 47.
 Salamandræ, 14.
 Salamandride, 14.; Ran. 13.
 Salamandrina, 13. 14. 24. 29. 42.
 Salamandrina, part. 14.
 Salamandroides, 35.; Cryptob. 54.; Triton, 21.
 Salamandrops, 53.
 Salientia, 11. 13.
 salmonea, Sal. 46.; Spel. 46.
 salmoneus, Pseudot. 46.
- Sauropis, 35. 37.
 Savi, Geot. 47.
 Savii, Sal. 47.
 Sayii, Menob. 67.
 schisteuse, Sal. 31.
 Schlegelii, Onych. 33.
 Schreibersii, Prot. 65.
 scutata, Sal. 41.
 scutatum, Hemid. 41.
 Seba, 9. 63.
 Seiranota, 15. 29.
 Serpentes, Amph. 56.
 Sieboldia, 52.
 Sieboldii, Megal. 52.; Onychop. 33.
 simile, Siren, 55.
 similis, Sal. 49.
 sinclut alba, Amb. 38.
 Siphonops, 57. 59.
 Siredon, 49.
 Siren, 49. 68.
 Siren, Muræna, 68.
 Sirena, 66. 68.
 Sirene, 69.
 Sirene, 10. 61. 68.
 Sirenidae, 64. 67.
 Sirenina, 68.
 Sirenoides, 69.
 Sirenoides, 55.
 Spelerpes, 32. 43.
 squalostomus, Cœc. 59.
 Stellio, 35.; Sal. 25.
 striata, Molge, 31. 33.; Siren, 69.
 striatus, Pseudob. 69.
 subcristata, Sal. 25.
 subcristatus, Cynops, 25.
 subfusca, Sal. 45.
 subfuscus, Mycetog. 45.; Pseudot. 43.; Triton, 45.
 subviolacea, Amb. 36.; Lac. 35.; Sal. 35.
 subviolaceum, Amb. 35.
 Subichthiens, 64.
 symmetrica, Sal. 23.; Trist. 23.
- T.
- tæniata mas, Lac. 27.; Sal. 27.
 talpoidea, Sal. 36.
 talpoideum, Amb. 36.
 Taricha, 15. 25.
 tentaculata, Cœc. 58.
 ter-digitata, Sal. 29.
 tereticauda, Triton, 49.
 terrestis, Sal. 17.
 tetradactylus, Menob. 66.; Prot. 66.
- tetrapoda, Amph. 63.; Batrach. 13. 51.
 Thunbergii, Lac. 33.
 tigrina, Amb. 36.; Sal. 36.; Triton, 36.
 tigrinum, Amb. 35.
 torosa, Taricha, 25.
 torosus, Not. 25.; Triton, 25.
 Tremadotera, B. U. 51. 64.
 tridactyla, Murænop. 55.; Sal. 29.
 tridactylum, Amph. 55.
 tridactylus, Molge, 30.
 Triton, 15. 18.; Lac. 21. 27.
 Tritones, 10. 11. 14.
 Tritonia, 14.
 tritonius, Proteus, 21. 27.
 Triturus, 18. 22.
- U.
- Urodela, Amph. 13.; Batrach. 13.
 Urodeles, Batrach. 13.
 Urodeli, 13.
 Urodela, 13.
 urophora, Amph. 51.
 unguiculata, Sal. 33.
 urophora, Batrach. 13.
- V.
- variegata, Sal. 49.
 variegatus, CEdip. 48.
 variolata, Sal. 34. 39.
 venenosa, Sal. 35.
 ventricosus, Brad. 26.
 vermiformis, Cœc. 57.
 versatilis, Amphib. 60.
 viridescens, Not. 23.; Tritur. 23.
 viscosa, Cœc. 60.
 vittatus, Molge, 29.; Omm. 29.; Triton, 29.
 vulgaris, Lac. 27.; Sal. 17.
- W.
- Waltl, Pleurod. 17.
 Waribainii, Molge, 21.
 Sal. 21.; Triton, 21.
- X.
- xanthostictus, Prot. 65.
 Xiphonura, 32. 34.
 Xiphosura, 48.
- Z.
- Zoysii, Prot. 65.

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